Transactions of the International College of Surgeons

PUBLISHED QUARTERLY BY
THE UNITED STATES CHAPTER OF THE INTERNATIONAL COLLEGE OF SURGEONS

JULY, 1938

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Article I, Section V of the International Constitution reads

> "It is strictly non sectarian and non political, it is decidedly against arbitrary restriction of merit and is free from prejudices, and will recognize the SURGEON and his accomplishments, and will not be influenced by his financial, political and other irrelevant status"

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Editorials

THE UNITED STATES CHAPTER, THE AMERICAN MEDICAL ASSOCIATION AND AMERICAN COLLEGE OF SURGEONS

LOYALTY, honor and ethics intergrate so closely as to be practically coincident.

Hence, any group in an organized profession, especially in organized medicine —must render absolute loyalty to the representative National governing body or stand both accused and convinced of ethical misconduct.

In the United States this organized constituted authority is vested in the American Medical Association. Since 1847 this association has guided the medical profession in America through reefs and shoals and storms that would have wrecked a group less able and less strong through that "very chastity of honour" so inherent to its structure. The least *that subsidiary medical and surgical bod*ies in the United States can render the A. M. A. is that loyalty which is honour, and that honour which is the actual nucleus of ethics.

According to the dictionary *"Ethics is the science of moral duty"* or the *"science of the ideal human character"* and *medical ethics the rules or principles governing the professional conduct of medical practitioners."*

And, according to the principles and the policies of the International College of Surgeons, without the strictest and most rigid adherence to the letter and to the spirit of ethics, both lay and medical, if any difference may be said to exist—*neither the College itself, nor any of its auxiliaries may function.*

The International College of Surgeons makes of first insistence the fact that none of its Members or Fellows, nor any of the State Sections of the Chapter may assume any attitude other than that of *support and cooperation* on problems coming properly within the province of the American Medical Association. Aims of the International College of Surgeons are restricted to the ways of science and learning. The College is for surgical advancement. It is *not administrative nor judicative, nor legislative, nor combative.* Aims of the American Medical Association, where the United States is concerned, and of similar National representative bodies in other countries are the compass by which the International College of Surgeons in all its chapters is guided. Wholehearted cooperation with such representative governing bodies in every land is a fundamental precept in the College Code which asks only the right to pursue science for science's sake and the good of humanity and of humanity learning.

"Loyauté vaut mieux qu'argent" runs an old French proverb. This is as true today as it was 600 years ago when money was less universal. Loyalty is of greater value, in the estimation of those to whom ethics is not a word, but a manner of existence and the *sine qua non* for that daily treadmill which is the way of all flesh, royal or routined, and to which disciples of science make obeisance as deep as that the great Ghengis Khan received from the humblest of his subjects Loyalty benefits from the stabilization emanating from the dignity of constituted authority, a dignity that becomes a vanishing limit without respect Stabilization as much as standardization is what this rocking, tumultous civilization needs

There is an old Greek proverb, "He that rides behind another must not think to guide" The American Medical Association is the leader of organized medicine in the United States The United States Chapter of the International College of Surgeons composed of constituents, all Fellows of the American Medical Association, are glad to ride behind so alert a leadership There are still so many "truths of science waiting to be caught" that the College, busied in its own work, appreciates the benefits accruing from loyalty to the aegis of the American Medical Association

Surgical and hospital practice in the last twenty five years have achieved an outstanding eminence One of the most effective stimuli in hospital standardization in the United States and of surgical betterment generally was inaugurated by the American College of Surgeons It is largely due to the endeavors of this body that the United States has triumphed as it has in such approximate perfection of hospital and surgical standardization—a service that is an outstanding and virile demonstration of the exemplary progress made by surgery and by hospitals in their ministrations to humanity

It is not in a spirit of competition with any surgical organization but rather in one of wholehearted cooperation that the United States Chapter of the International College of Surgeons sets forth upon its way

PROF. RUDOLPH NISSEN

First Vice-Pres. International College of Surgeons

GREETINGS

The issuing of the first [illegible] the Transactions of the [illegible] College of Sur- [illegible] profound greetings [illegible] enjoyable [illegible] and from a [illegible] I feel [illegible] International organization will proceed satisfactorily, because its ideals and aims will be received by serious minded surgeons in every part of the world favorably. With certain changes in the Statutes and after crystalization and rearrangement of the various problems, we all will be proud of our work and achievements for the advancement of surgical progress.

THE INTERNATIONAL COLLEGE OF SURGEONS AT LARGE

SINCE the Charter of the International College of Surgeons was issued to its Founders Committee (Jentzer Adler Jaendin), in Geneva, Switzerland in 1935 the question was frequently asked "Why an International College of Surgeons?" The answer is easily found (a) by appreciating that there is a keen desire among scientific men to exchange thoughts and experiences and benefit from each other's studies and observations, (b) that most of the specialties are represented by International organizations, (c) that there are excellent surgical colleges in many parts of the world but none of an international scope (d) by reading the raisons d'être for the College on page 8 and (e) by an appreciation of the profundity of the meaning of Pasteur's aphorism "La science n'a pas de Patrie parce que le savoir est le patrimoine de l'humanité, le flambeau qui éclaire le monde" the spirit of which has been adopted by many international organizations and embraced by the International College group as a keynote for its activities

Since its inception lively interest has been shown in its activities in many quarters of the world From far off China Dr McCracken reported excellent progress before the onset of the present unfortunate conflict Enthusiastic expressions for its future and ideals were received from President Jirasek and many others

Professor Jentzer, the European Secretary Treasurer General has done much constructive work in spite of the unsettled political conditions on the European continent Similarly great enthusiasm has been displayed by many European Regents to mention only the excellent work of Professor Stanischeff of the University of Sofia, Bulgaria, Vice President Rudolf Nissen, erstwhile of the Sauerbruch Clinic, now head of the Surgical Department of the University of Istanbul, Turkey, Professor Papayannou of Cairo and many others

It was through Professor A Mario Dogliotti that the distinguished Senator and Surgeon, Prof R Paolucci and Prof Gino Pieri became interested in the College and their names added to its roster

Expressions of encouragement were received from Profs Corpis and Bejarano of South America, from Manzanilla of Mexico and from many others in remote quarters of the world

I was particularly gratified to hear Dr Leopold Mayer of Brussels, Belgium Permanent Secretary Treasurer of the International Surgical Society, personally saying to me "I feel confident that the International College of Surgeons will be an influence for a great deal of good" Prof Mayer voicing his conviction that the work of the College and that of the International Surgical Society having different aims added "Since I became convinced that the ideals of the College are different from those of the International Surgical Society of which I am Permanent Secretary Treasurer General, it is my keen desire to cooperate with the College"

One cannot escape the conviction that in true and honest expression of both science and art there exists always that universality which is a muted keynote and may be expressed in terms of relativity. Acknowledgment of this universality, and its coincident human interdependability, is perhaps the most accurate answer therefore, that can be phrased to the question, "What is the need for an International College of Surgeons?"

One must admit the value of an organization which is neither competitive nor secessive. Specialists in any branch of surgery, whether numerically large or small can visualize the possible working advantages of cooperation with already existing Colleges or those to be formed in the future which are ruled by scientific ideals *and encroaching upon no other organization's domaine in any way.*

Many eminent men in surgery have declared—and others daily are adding their subscription to the same tenet that the common language of scientific endeavor and the interchange of experience enrich the surgeon, when in a mutual affiliation, with fraternal obligations, there is a sharing of experience and a mutual participation in advancement.

Again, as long as the ideals, the objects and the principles of the International College of Surgeons are for the development and betterment of surgery and of surgeons, and as such aims at worthy contributions to the cause of science and humanity, its foundation rests on a solid basis. And of the men who have worked to lay that foundation, and toil on to rear upon it a meritorious and justifiable edifice, let it be said in all fairness that they labor patiently realizing that,

"For this and that way swings
The flux of mortal things,
Though moving only to one far-set goal."

—Max Thorek.

AN EDUCATIONAL DREAM BECOMES A REALITY

VINCENT A LAPENTA, M D
INDIANAPOLIS, INDIANA

THAT the problem of the would be surgeon is as ancient as man, can be surmised from the Hippocratic Oath With the growing of moral consciousness, increasing the recognition that the practice of surgery requires special training of a systematic nature under the guidance of masters, the necessity to inculcate this principle induced the father of the healing art to incorporate a solemn pledge in the oath, which he required from all who would be known as his pupils

> *"I WILL NOT CUT PERSONS LABORING UNDER THE STONE BUT WILL LEAVE THIS TO BE DONE BY MEN WHO ARE PRACTITIONERS OF THIS WORK"*

Renal and Bladder stone was and is yet a widespread disease in the Greek Islands and in the cities surrounding the Black Sea and the Bosphorus

Our International Vice President, Professor Rudolph Nissen, told me a few weeks ago that one fourth of all the major surgery in Constantinople is for these afflictions

We can appreciate that this difficult branch of surgery must have been invaded by so many pretenders, that Father Hippocrates felt compelled to require an oath from all his pupils before honoring them with a certificate from his hands

This is the first affirmation from such high authority that, regardless of natural gifts, great surgeons do not just happen, and that all skillful, well developed surgeons, freely acknowledge the debt they owe to the masters who supervised their systematic development

No one at any time or any place has ever expected the Medical Schools to produce master surgeons The teaching of surgery in the undergraduate curriculum is rather directed to enable physicians to take care of minor surgery and surgical emergencies and to be able to diagnose lesions requiring operations of election

For this difficult branch of therapeutics, those who have truly qualified in every epoch have been willing to undergo systematic training at the hands of many masters, and usually under the supervision of one personal master, who coordinated the study that the pupil carried on in many places

In the last 50 years great progress has been made in postgraduate instructions in the various fundamental branches of surgery and in applied surgical technic For this we can be truly thankful This work is becoming better coordinated, not only in the various medical schools, offering these courses, but in the special postgraduate institutions making a special effort in this direction

Probably nowhere better than in the United States, is progress being made in this direction, since the Council on the Medical Education of the American Medical Association, having brought up undergraduate medical instruction to a point of excellence, which commands the respect of the whole world, is now doing wonderful work in coordinating postgraduate instruction in surgery and in various specialties

The American College of Surgeons has also played and continues to play a great part in this march of progress It has, in a few years, achieved such a high standardization of hospitals that it has trans formed the large private hospitals from the status of hotels for the sick to scientific institutions, and provided through the staff conferences a continuous control and study of the clinical activities of the institution. This phase of work constitutes a milestone in the progress of surgery.

All this is most encouraging and indispensable, and can be confidently expected to assure us of great progress in the years to come. Yet all of this wonderful advancement leaves the devotees of surgery still unsatisfied.

Anyone who has conversed with the great masters of surgery in any part of the world, has found a universal hope expressed that some day in some way the surgical profession would organize itself as a world-wide fraternity, for the purpose of picking out, in time, promising candidates and to guide and nurture their development, their culture, their technical training, so as to produce a generation of masters, certainly varying in excellence, but all individually excellent, to carry on the task for the next generation to follow them. The thought behind this is that no one can remain long enough in the various postgraduate institutions and that the development must go hand in hand with clinical practice under supervision, for which the future masters are to feel the individual responsibility.

The central concept has, therefore, been, that the evolving and developing surgeons, after basic training and periodic postgraduate instruction, would remain in their locality as associate Fellows of a group, devoted to the continuous study of surgery and that these future masters be brought into such intimate union with the matured ones of their district, as to give them an opportunity through clinical conferences and operative clinics to acquire the best knowledge of the day and contribute directly to their own and their fellows advancements.

How the International College of Surgeons hopes to bring to a reality this ancient dream, I hope to show through the Questions and Answers that are to follow.

The exposition of the practical means for the realization of these noble aims we owe to the inspiration received from Dr. William Jepson, who has already made the dream a reality in his corner of the vineyard, these many years, in the state of Iowa. His presentation and practical suggestions made it possible for the Executive Council to perfect a plan, in which all the Regents, Specialty Regents, Fellows and Members are welded into a Teaching Guild, which shall carry on this program for the advancement of surgery in every State or Province of the various nations, represented in the College.

THE PURPOSES AND AIMS OF THE INTERNATIONAL COLLEGE OF SURGEONS EXPLAINED IN QUESTIONS AND ANSWERS, COMPILED UNDER THE AUSPICES OF THE BOARD OF TRUSTEES

Question. What need is there for an International College of Surgeons?

Answer. The Founders after consultation with many eminent surgeons throughout the world felt and feel convinced that a great need exists for a *new type of organization* binding all progressive surgeons in a world wide, cooperative effort to advance the standards of practice of surgery, to provide for a thorough training of new generations of surgeons and to stimulate research by the awarding of prizes in every branch of surgical science and art.

Question. In what respect does the International College differ from existing National and International surgical Societies and Colleges?

Answer. Existing surgical Societies have performed and will continue to perform an indispensable function, however they are not postgraduate or clinical bodies, but offer rather a variety of distinctions, some of them quite exclusive, all very necessary, but none that provide constant courses of postgraduate instruction preparing the members for higher efficiency and providing for proper qualifying advancements to stimulate this constant effort towards higher surgical perfection on the part of its members.

Question. How does the International College of Surgeons hope to accomplish this desirable end?

Answer. By providing in each State or Province of a Nation a selected Board of Regents and Specialty Regents, whose duty it is to prepare a program of systematic study in which Associate Members, Members and Fellows and Regents participate, both, as teachers and discussants, in addition to providing for practical operative demonstrations, thus offering an opportunity and an incentive for men to prepare themselves for increasingly higher quality of work. This Study Group in each state or province constitutes a teaching Guild and becomes a living force for surgical progress not only among the Members and Fellows of the College but among the profession as a whole, since reputable physicians in good standing with their medical society and in the United States who are Fellows of the A. M. A., are invited to attend these Study Seminars without charge.

Question. How is the teaching work of the College coordinated?

Answer. There will be National Regents in every branch of surgery. These National Regents are in effect the Professors of a particular branch who assume the duties of Clinical Professors, and arrange for the program of study. The State Regents in turn in applying these programs, arrange for the operations to be performed at each stated meeting by Members of the group and provide for the round table discussion that is to follow.

Question. Does this work of the College make postgraduate work offered by various institutions unnecessary?

Answer. It does not. On the contrary one of the important results we expect from the postgraduate Study Guilds is the creation of a desire on the part of associate Members to take frequent systematic postgraduate courses, offered by leading Universities [illegible] duate Schools. The Regent [illegible] recommend Fellows who have taken these systematic postgraduate courses for more rapid promotion in the College, and those who have taken courses for an entire scholastic year, in subjects approved by the National Regent of the surgical branch they are preparing themselves for, may even be excused from the requirement of presenting a thesis. Thus the College will definitely strengthen the educational programs of leading Universities and Postgraduate Schools.

Question: How is the College composed?

Answer: The College is composed of National Regents, Senior Regents, one in each State, State Regents and State Specialty Regents.

Question: How is the membership composed?

Answer: The Membership is composed of associate Members, Charter Members, Charter Fellows and elected Members and Fellows. Associate Members, Physicians whose practice is largely devoted to surgery can be elected associate Members, and by continuing their studies with the postgraduate Study Guild, be, in due time and after examination, promoted to Members and later by other examination and thesis, be elected Fellows.

Charter Members and Charter Fellows are those who have been elected from among surgeons of recognized ability and who have been in the practice of surgery not less than 15 years.

Masters. This is the highest degree that is conferred only for outstanding and exceptional achievement in surgery and may be also conferred on eminent surgeons who do not belong to the College.

Question: Who may become Charter Members and Charter Fellows?

Answer: Surgeons of state-wide and nation-wide reputation who have been in the practice of surgery not less than 15 years and who have made notable contributions to the literature may be invited by the Regents of the State or Province in which they reside or may be invited on motion of a member of the Executive Council, or may make their own application directly either to the Senior Regent of their State or to the Secretary of the U. S. Chapter or the National Chapter or in whatever country they may reside.

Surgeons of state-wide reputation, whose contributions to literature are not very extensive, may be elected Charter Members and are required to present a thesis on a surgical subject of their choice.

Those who have made notable contributions to literature and who have attained greater eminence, are elected Charter Fellows. Both Charter Members and Charter Fellows may be required to operate in the presence of a designated Committee of Regents, but in the case of men of outstanding reputation, they may be exempt from this part of the qualifying examination, but must present a thesis. The Council of Examiners has no authority to exempt any one from the thesis requirement.

Question: How are elected Members and Fellows selected?

Answer: Exactly in the same manner as the Charter Members and Fellows, in addition to which in the United States they may be required to pass the examination of one of the American Boards, approved by the Council on Medical Education of the American Medical Association, in addition to which they will then fulfill their requirements by operating in the presence of the Regents Committee and presenting an acceptable thesis.

Question: How are associate Members selected?

Answer: Physicians whose practice is mainly surgical, but whose surgical career and training is not yet complete, may, by applying to the State Regent of their State and presenting proof of surgical fitness in the type of surgery that they are practicing as evidenced by hospital records, by taking an oral and written examination, as the Regents may prescribe, be elected associate Members Once elected associate Members, they must attend all courses of instructions *given by the Regents of the State as a* Teaching Guild in addition to undertaking from time to time such postgraduate work as may be required to entitle them to promotion

The College will assist these men in arranging for courses in any part of the world, in addition to extending to them fraternal assistance and guidance of Regents of the College, wherever they may go When courses are completed these men are then *encouraged* to take the examination of one of the American Boards above referred to, and if successful there, and if they meet the other requirements of the College, will be elected Members

Question Are associate Members of equal status with the other Members and Fellows of the College?

Answer They have equal enjoyment of all the advantages of the College throughout the world and are entitled to attend all meetings, but they may not use any designation after their name, until they are elected Members or Fellows, only Charter Members, Charter Fellows and elected Members and Fellows may use the designation of the College degrees *“M I C S GENEVA,” “F I C S GENEVA”*

Question Are Teaching Guilds organized in every State of the U S ?

Answer They will be organized in all States and it is suggested that in States of small population, 2 or more States unite, to form a Bi or Tri State Teaching Guild

Question What privileges does the card of the College carry?

Answer All Members and Fellows of whatever rank and classification, will be cordially received in the operating rooms of any Member or Fellow of the College *and particularly of those that* are Regents Those of Regent rank will not only be glad but will feel obliged to receive and provide every facility to visiting Members or Fellows of the College and to assist them in planning postgraduate courses in their locality at the most advantageous conditions possible

Every Regent is bound by his pledge to use all of the influence at his command for the benefit of Members and Fellows of the College with the sole object of increasing the usefulness and influence of the College and promoting the progress of surgery

Question Does the relationship between Members and Fellows of the College vary in any degree from the usual one of other learned Societies?

Answer It certainly and fundamentally does Once a surgeon has passed all the tests, received the approval of the competent Board of Censors and gained election by the Executive Council, he is considered a living unit of the College throughout the world and henceforth the College has a distinct interest in furthering his progress, in extending him every possible protection, and every Fellow of the College will feel equally bound to consider the accepted Member as a brother and on whose reputation no assaults will be tolerated without unequivocal evidence of misconduct Thus the College is both, a Teaching Guild and a Fraternity, consecrated to the noble ideal of maintaining the torch of surgical learning and to prepare and strengthen the *hands of every successive generation of surgeons that are to maintain it flaming for the benefit of humanity*

REPORT OF THE PROCEEDINGS OF THE FIRST ASSEMBLY OF THE UNITED STATES CHAPTER OF THE INTERNATIONAL COLLEGE OF SURGEONS, AT NEW YORK

DR. CHARLES H. ARNOLD

Secretary to the Scientific Assembly

THE First Assembly of the United States Chapter of the International Chapter of College Surgeons (Geneva) was held at the Waldorf-Astoria Hotel, New York City, on June 1st and 2nd, 1937.

The success of this Assembly was due to the untiring efforts exerted by every member of the various committes under the leadership and direction of Dr. A. A. Berg, General Chairman. The Surgeons constituting these committees made sacrifices to give the time which was necessary to properly organize and carry out the details of the Inaugural Assembly.

The personnel of the committees was as follows

Program Committee: Dr. A. A. Berg, Chairman, Dr. P. Brooke Bland, Dr. Karl Meyer, Dr. Stuart N. Michaux, Dr. Henry M. Scheer.

SUB-COMMITTEES ON ARRANGEMENTS

Scientific Program: Dr. Duncan MacPherson, Chairman; *Banquet Committee:* Dr. T. J. Tobin, Chairman; *Entertainment Committee:* Dr. Henry Scheer; *Speakers Committee:* Dr. Frank Yoemans, Chairman; *Ladies Entertainment Committee:* Mesdames Whitman and Root.

Advisory Committee on Arrangements: Dr. Edw. Frankel, Jr., Dr. J. A. Haiman, Dr. M. J. Horan, Dr. Morris Levine, Dr. F. H. Russell, Dr. H. B. Schoenberg, Dr. Clarence H. Smith, Dr. Arthur Stoloff. Dr. David W. Tobey, Dr. Armitage Whitman and Dr. George A. Wyeth.

The morning of Tuesday June 1st was devoted to registration, at which time there were 256 surgeons registered from 25 states and 4 foreign countries. Promptly at 2:00 P. M., his Excellency, Herbert H. Lehman, Governor of the state of New York honored us with his presence, having come to New York solely for the Assembly. His address of welcome is to be found on other pages.

The scientific program which followed was opened by an address by Dr. David Marine, Montefiore Hospital, New York City on "Exophthalmos in Graves Disease" (with remarks on its prevention). Discussion of this address was opened by Dr. B. S. Oppenheimer, of Columbia University, New York. Following this, Dr. André Crotti, president of the United States Chapter of the International College of Surgeons, of Grant Hospital and Crotti Clinic of Columbus, Ohio, spoke on the "Etiology of Endemic Goiter" and the research work he had carried out. The discussion of this address was opened by Dr. T. W. Hinton of New York, Dr. B. B. Raginsky of Montreal, Canada, who is internationally known for his research in Avertin Anesthesia, spoke on the "Present Status of Analeptics in Anesthesia." The discussion of his address was opened by Dr. E. A. Rovenstein of New York. The next and last address on the program for the afternoon of June 1st was most ably presented by Dr. P. Brooke Bland of Jefferson Medical College Hospital, Philadelphia, Pennsylvania, wherein he thoroughly discussed the subject of "Syphilis Complicating Pregnancy". The discussion of this address was opened by Dr. Harbeck

Halsted of Columbia University, College of Physicians and Surgeons, Vanderbilt Clinic, New York City

Following the close of these discussions announcement was made that a dinner dance had been provided for the Fellows and their ladies, to begin at 7 30 P M The Assembly then was adjourned until two o'clock the following day

The forenoon of June 2nd was devoted to visits to the hospitals and clinics given by the various Fellows of the International College of Surgeons and at 2 00 P M the scientific assembly reconvened and was opened by a paper on the "Fundamentals of Pterygium Surgery" by Dr T J Dimitri of Tulane University of New Orleans, La The discussion of this paper was opened by Dr Oscar B Nugent, Professor of Opthalamalogy, Chicago Eye, Ear, Nose and Throat Hospital, Chicago, Illinois

Following this, "Problems of the Surgery of the Prostate' was most ably presented by Dr Hugh H Young of Johns Hopkins University Johns Hopkins Hospital, James Buchanan Brady Urological Institute, Baltimore Maryland The discussion of this paper was opened by Dr O S Lowsley, Director of the Department of Urology of James Buchanan Brady Foundation, New York Hospital

The next paper on the program was that of Dr F S Dolley Cedars of Labanon Hospital of Los Angles, California, who spoke on "Tumors of the Chest with Description of Surgical Approach" The discussion on his paper was opened by Dr Adrian Lambert, Columbia University College of Physicians and Surgeons, New York City

The next and last address on the program of the New York Assembly of the United States Chapter of the International College of Surgeons was presented by Dr A A Berg, Mount Sinai Hospital, New York City, who spoke on "Surgery of Chronic Non Specific Ulcerative Colitis" The discussion of his paper was opened by Dr Jerome Lynch New York Polyclinic Medical School and Hospital, New York City

A radio address by Dr Frank C Yeomans of New York City was given setting forth the aims and ideals of the College This will be found in subsequent pages

At the conclusion of the Scientific Program announcement was made that the Assembly Banquet, to be followed by the Conferring of Degrees, was to be held at 7 30 P M in the ballroom of the Waldorf Astoria Hotel Dr A A Berg of New York City presided as toastmaster Speakers at the evening meeting following the banquet, which was attended by the Fellows and their ladies were Dr S S Goldwater, Commissioner of Hospitals of New York City and Dr Andre Crotti President of the United States Chapter of the International College of Surgeons

Dr Crotti stated in his Presidential address that the purpose of the College is to function as a College per se in other words it is to be educational

The Executive Council on the following day adopted a most comprehensive plan which was presented and outlined to them by Dr William Jepson of Sioux City, Iowa This plan calls for the establishment of Clinical Guilds, the details of which are to be found on subsequent pages

President Crotti further announced the personell of the Board of Trustees to be as follows Dr Vincent A Lapenta of Indianapolis, Indiana, Chairman, Dr P Brooke Bland of Philadelphia, Dr Oscar B Nugent of Chicago, Dr A A Berg of New York City, Dr Max Thorek of Chicago To these have been added since, Dr Julien C Pate of Tampa, Florida and Dr Fred Douglass of Toledo, Ohio

Dr Vincent A Lapenta, President of the Board of Trustees, announced tht he had received cablegrams [illegible] on [illegible] cations from National Re [illegible] seven different foreign [illegible] these congratulatory messages to the Assembly.

The Director-General of the International College of Surgeons then conferred the Degree of Fellowship upon Dr. André Crotti, President of the United States Chapter who in turn conferred the degree and title of Fellow of the International College of Surgeons (Geneva) on the assembled candidates, and an honorary Fellowship was conferred on Dr. Hugh H. Young of Baltimore, whose written acceptance was read.

Following this ceremony, Dr. Lapenta, President of the Board of Trustees announced the following appointments had been made: Dr. A. A. Berg, New York City, National Regent in Gastric Surgery; Dr. George Van Ingen Brown, Milwaukee, Wisconsin, National Regent in Plastic Surgery; Dr. P. Brooke Bland, Philadelphia, Pennsylvania, National Regent in Gynecology; Dr. Oscar B. Nugent, Chicago, Illinois, National Regent in Ophthalmalogy; Dr. Arthur Steindler, University of Iowa, Iowa City, National Regent in Orthopedic Surgery; Dr. E. E. Fincher, Jr., Atlanta, Georgia, National Regent in Neuro-Surgery; Dr. Chevalier Jackson, Philadelphia, National Regent in Bronchoscopic Surgery; and Dr. Andre Crotti, Columbus, Ohio, National Regent in Goiter Surgery. All of these appointments were to be for the term of one year.

A group of western songs were sung by Dr. W. Andrew Bunten, of Cheyene, Wyoming, State Regent for Wyoming, who appeared in cowboy costume and charmed the entire group with his interpretations of these songs depicting the life of the Old West.

The last and closing number of the program was a most entertaining and dramatic review of his own life and intimate contacts by Uncle Bob Sherwood.

OPENING ADDRESS OF HIS EXCELLENCY, HERBERT H. LEHMAN, GOVERNOR OF THE STATE OF NEW YORK

MR. President, Mr. Chairman, Friends of the International College of Surgeons:

I deem it a privilege and a pleasure to be here today to welcome this first assembly of the International College at its meeting in the city of New York I particularly am happy to welcome so many of the members of the College who came from states outside of our own

I have no set speech. Unfortunately, I have been so busy in the past weeks that I have not had an opportunity of preparing one. As you may know, when the Legislature adjourned three weeks ago, it left 850 bills which have to be acted on by June 6 I still have 300 bills on which I see night and day that fixed deadline set by the Constitution of the State, with the knowledge that I have to act on the bills by midnight of June 6 And yet in spite of the very great pressure of official work, I was so much interested in the work of this new organization that I deem it a real privilege to come down here from Albany especially to greet you

It seems to me that this organization is of particular importance both in a national and international way in many ways In the first place, it provides a means of aiding the standards of surgery throughout the world, as they concern various surgical specialties. In the second place, it provides the means of coordinating and developing uniform methods of surgery and medicine. In the third place, it provides the means of developing sound relationships to the communities which they serve, and to the governmental agencies under which they may operate.

HERBERT H. LEHMAN
Governor of the State of New York

I know from my own personal knowledge particularly of the benefit that comes to government and to our citizens generally through a close relationship between medical and surgical organizations, and government. We have, during the past several years, had a fine cooperation between our State the recognized and responsible medical organizations of the state.

It has been of great value, that cooperation, in fixing standards, in drafting and scrutinizing legislation, and in the maintenance of sound medical and governmental practices.

It has been my privi

Journ. Med. Edu. Vol. 28, No. 10, Part 2, October 1954.

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CORRECTION

In the April issue of this Journal an error occurred on the first page of the report, "The Study of Applicants." The correct statement reads: "In the year under report there were 48,586 applications filed by the 14,678 individuals. The medical schools had almost 40,000 fewer applications to consider than they acted on in 1949-50."

The statistics reported are in all cases limited to applications acted upon and do not include completed applications filed but withdrawn before action was taken. One medical school points out, for example, that it had 251 completed applications withdrawn before the committee on admissions took action on them.

Initial Orientation of Medical Students

DAVIS G. JOHNSON

DEVELOPED IN RESPONSE to a definitely felt need, the 1952 orientation program for entering medical students at the State University of New York at Syracuse was rated as being "of great value" by 95 per cent of those participating.

This sample finding of the program described in detail below is one more indication of the need for orienting the new medical student. As reported by the Survey of Medical Education (1; p. 333), "The transition from college to medical school is apparently sharp and difficult for most students."

At the undergraduate level, the importance of comprehensive orientation programs has long been recognized and practically all entering students now benefit from such help.[3, 5] At the medical college level, only one published report of orientation programs was discovered—namely a report by Peery and discussants[4] which describes several programs developed during the 1940's.

The program described below is shorter, and apparently somewhat more personalized and informal than most of those previously reported. Although it is entirely possible that other medical schools have independently adopted similar programs for themselves, it was felt worthwhile to report this program for comparative purposes.

In addition to offering a description of the orientation program itself, this report also emphasizes: (1) its cooperative development and (2) its systematic evaluation. For in these two techniques lie important potentialities for improving many phases of medical education.

Preliminary planning of the Syracuse program began in the fall of 1951 and extended until its adoption in September 1952. In line with current trends in college administration[2] the development of the program was a cooperative one and included the joint efforts of all of the groups indicated in Exhibit A.

It should be noted that the students themselves played a major role in both the planning and execution of the program. The first step in its execution, for instance, was to assign a senior medical student to every three freshmen and to have this "senior guide" write personal letters of welcome during the summer to each of his freshman "guides."

The orientation program proper is outlined in Exhibit B.

In order to systematically check on the value of the above program, the 77 freshmen and 25 seniors who had participated were asked to evaluate their experience approximately

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Dr. Johnson is assistant dean for student personnel at the State University of New York College of Medicine at Syracuse.

Exhibit A—Development of Program

	GROUP	MAJOR CONTRIBUTION
1	Student Body as a Whole	Indicated need on questionnaire
2	Faculty as a Whole	Indicated need on questionnaire
3	Faculty Committee on Student Affairs	Devised student opinion questionnaire Outlined suggested program
4	Student Council	Modified suggested program
5	Student Honor Societies	Administered questionnaire to students Volunteered to return to school early to serve as senior guides to freshmen
6	Faculty Council	Approved program with slight modifications
7	Faculty-Student Association	Allocated money to finance program Obtained faculty opinion
8	Student Personnel Office	Coordinated administration of program

a week after the orientation period. Replies were received from a total of 92 students (71 freshmen and 21 seniors). The results are those indicated in Exhibit C.

To simplify the table, the figures have been combined for freshmen and seniors. It is interesting to note, however, that in general, the seniors rated the program even higher than did the freshmen.

Analysis of Exhibit C indicates that all phases of the program were rated as being of either "great" or "moderate" value. Looking at the rank order listing of features rated, it is interesting to note that the senior guides were considered by far the most valuable feature. This was felt to be a particularly significant finding in view of prior questions raised by several faculty members concerning the possible inappropriateness of a "big brother" approach at the graduate school level.

Reasons for the high rating of the

Exhibit B—Content of Program

FIRST DAY

1:30 P.M.	Freshmen meet senior guides and pick up packets containing name tags, student bulletins, registration materials, etc.
2:00 P.M.	Convocation Welcome by dean Welcome by president of student council Talk on student personnel services Illustrated lecture on the history of the college
4:00 P.M.	Reception For freshmen, senior guides, administrative officers and first-year faculty.

SECOND DAY

8:30 A.M.	Registration
11:00 A.M.	Introductory Clinic Presentation of diabetic patient and discussion of need for basic sciences as background for clinical training
1:00 P.M.	Luncheon for freshmen and senior guides
2:00 P.M.	Guided tour and discussion with senior guides (tour mainly of Basic Science Building, including library and other facilities).

senior guides are suggested by the following quotations from the free comment section of the evaluation form:

"No faculty member can be as candid as a student." "A student understands the attitudes and doubts of the entering student and can present the most important information." "The large number of guides insured that all facts reach the freshmen on a personal basis."

The highly favorable overall evaluations may also be illustrated by the following quotations:

"The program was of great value in helping us overcome our feeling of strangeness. It also made us aware of our goals for the next four years, especially this first year. Moreover it gave us the feeling that the faculty is really concerned with our welfare."

"The program this year was a wonderful help in getting adjusted to not only the school but to the city. The overview of the school and its facilities make it much easier to see exactly our position in the school. Thanks a lot."

"Without the orientation program I can see where an incoming freshman could really get lost his first few weeks. It is a very good system of transition and indoctrination. Keep it up."

Concerning the length of the program, the following comment is quoted. "It was neither too much nor too little. I hope it will never be any longer than it was, nor of lesser quality."

A final quotation, interpreted by the author as attributable to the cooperative planning approach, is the following: "The attitude of all involved in the endeavor . . . was excellent. This attitude 'made' the entire program." When executing a program we ourselves have helped plan, our attitude tends to be much more enthusiastic than if the plan has been imposed upon us.

Exhibit C—Evaluation of Program

Features Rated (in rank order)	Of no value	Of little value	Of moderate value	Of great value	Total no. replies
1. Senior guides	0	1	3	(86)*	90
2. Guided tour	0	0	16	(73)	89
3. Intro. clinic	0	1	20	(67)	88
4. Convocation	0	2	38	(52)	92
5. Student bulletin	0	4	(50)	38	92
6. Luncheon	0	6	(45)	39	90
7. Reception	1	5	(51)	33	90
Overall rating	0	0	4	(84)	88

*Parentheses indicate median ratings of features

Although the above quotations are admittedly among the more favorable, it should be noted that no really unfavorable comments were received, even though the evaluation sheets were not signed. Probably the least favorable comment received was, "Well conducted orientation program; allowed to drag at a few places."

As a result of the above favorable evaluations, similar programs are planned for future years. Refinements in details will be made on the basis of continuing evaluation. Special steps have already been taken, for instance, to improve those features rated relatively weakest—namely the bulletin, luncheon and reception.

Individual medical schools interested in developing or improving their initial orientation programs will find further suggestions in the sources listed at the end of this article. A further logical "next step" for the medical schools as a group might be a systematic survey of orientation practices in all 81 schools and a summary of the strong features of the various programs. Although such a project would require considerable time and effort, it would undoubtedly prove of real value in further helping students get off to the best possible start in their medical training.

Summary

An attempt has been made to indicate the value of the initial orientation of medical students by reporting a program recently instituted at one medical school. In addition to describing the content of the program, emphasis has also been given to (1) its cooperative development and (2) its systematic evaluation.

The strongest features of the program were found to be (1) the senior medical students who acted as "guides" and (2) the introductory clinic.

As concerns the further improvement of medical student orientation, a systematic survey of orientation practices in all schools has been recommended.

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Use of the Rorschach Method in Medical Student Selection

LEONARD D. ERON

IT HAS BECOME increasingly apparent in recent years that efficient prediction of successful performance in medical school must be based on instruments which take into account other variables in addition to intellectual adequacy. The personal interview generally has been geared to determining whether the candidate possesses those personal qualities which the interviewer feels are necessary for successful completion of the medical curriculum and for subsequent functioning as an effective physician. However, the interview has been demonstrated to be unreliable and is often impractical. To maximize the validity and reliability of the kind of information obtained in personal interviews, standardized interest and personality measures have been utilized.

The Rorschach test is one technique which has been given wide prominence. Its use as a screening device and substitute for the personal interview has been described in this journal[4, 6] as has its function in differentiating successful from unsuccessful students after they have been admitted.[7] Other studies have attempted to delineate the personality structure of medical students as a group, with the implication either that medicine attracts a certain type of individual or that medical school itself has a levelling effect on its students which produces similar kinds of personality structure in them.[5, 2] The shortcoming of all these studies is either that: (1) data are not presented on a sufficiently large number of subjects to support the assertion, or that (2) control groups of students in other fields are not utilized. Thus we do not know how representative or distinctive these findings are.

It is the purpose of this study to determine: (1) whether the Rorschach protocols of medical students reveal basic similarities which can differentiate them from the protocols of another group of students, and (2) to determine whether the Rorschach protocols can differentiate the superior medical students.

Procedure

Individual Rorschach tests were administered to 35 male students in their third year of medical study.* This constituted the total number of males in the class. A similar number of Rorschach tests were administered to a group of third-year divinity students comparable in age, sex and education to the medical school sample. If there were any consistent pat-

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Dr. Eron is assistant professor of psychiatry and psychology at Yale University School of Medicine.

*This research was supported by funds from the Social Research Foundation.

terns characteristic of this group of medical students it would be expected that they would emerge when comparisons were made with another student professional group at a similar stage in their education.

In the second part of this study a comparison was made between the Rorschach records of the most and least successful students. For this comparison the 10 students who were elected to AOA were compared with the 10 students whose grades for the third clinical year (average of grades in internal medicine, surgery, psychiatry and pediatrics) were the lowest. Actually the disparity between the two groups was not too great since all performed adequately enough to graduate the following year. It was felt, however, that there were sufficiently real and demonstrable differences in the clinical performance of these students so that differentiating grades could be assigned to them. All students in the lower grade group had average grades of "C."

In the statistical analysis all the separate scores and combination of scores* ordinarily used as a basis for Rorschach interpretation were compared according to appropriate statistical procedures which take into account the non-normal distribution of Rorschach scores, the inequality of units and the dependence of the individual scores on the total number of responses. This was done by plotting each variable against the total number of responses, drawing a line fitting the medians of the columns, and then comparing by chi square the proportion of cases in each group falling above and below the median, as recommended by Cronbach.[3] In addition, three expert judges tried to sort those records which belonged to the medical students from those which belonged to the divinity students on the basis of the protocol itself without reference to identifying data.* In the same way they then tried to select the 10 best and the 10 poorest medical students. This part of the experiment was done in order to overcome the objection that using only the formal scoring in such a comparison sacrifices the essential flavor of the records on the basis of which ordinary clinical judgments are generally made. For the first part of this sorting task the judges were each given seven folders in which there were 10 protocols. They were told that in each folder there were five medical student records and five divinity student records which they were to sort as best as they could according to whatever standards they wished. For the second part of the task they were given two folders, each containing 10 records, five of which were contributed by the top men in the class and five by the poorest men in the class. They were also told to sort these. The scoring of each response and a summary profile accompanied each record. The judges were invited to refer to these or not as they saw fit. Previous to the actual sorting, which was done independently by each judge, the three judges met for an informal discussion of how they felt medical and divinity students would differ in personality structure, although no reference was made as to how these differences would be reflected in their Rorschach records. At this time also they were apprised of the current literature concerned with Rorschach performance of medical students and each had the opportunity to read the work that had already been published. This session was held to help insure that all judges approached the task with somewhat similar criteria.

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*The author administered and scored all the Rorschach tests according to the Beck procedure.

*Judges were Drs. Ethelyn Klatskin, Edith Lisansky and Sarah Schaefer.

Results and Discussion

Formal Scoring. Of all the individual scores and combination of scores on which the medical and divinity students were compared there was a statistically significant difference (beyond the .05 level of confidence) in only two, many fewer than would be expected even by chance in the total number of explicit and implicit comparisons made. Thus, when the total number of responses are controlled as previously described, the medical students contribute significantly more popular responses ($P = .01$). Also more medical students have a wide discrepancy between reaction time to chromatic and achromatic cards than do the divinity students ($P = .01$), although the trend in both groups is for chromatic reaction time to be longer than achromatic reaction time. In addition, there was no significant difference between the two groups in the frequency of occurrence of the various criteria for color shock, which refers to the tendency of a subject to react differentially to those cards which contain color figures and which has traditionally been accepted as a phenomenon of neurosis.[1] The criteria used in the determination of the presence of color shock in this study are adapted from Beck[1] and are identical with the ones utilized by Molish in his study in which color shock was said to be characteristic of medical students.[5]

Thus it would seem that on the basis of this analysis of the formal scoring of the Rorschach records there is no difference beyond what would be expected by chance between this group of medical students and a comparable group of divinity students. The characteristics which some investigators describe as typical of medical students are not seen as distinguishing them from at least one other professional group. There is no difference in the level of productivity, amount of intellectual drive, organizational energy, level of form accuracy, originality of interest content, imaginative talent; no difference in the presence of color or shading shock, all of which Molish has said to be characteristic of medical students.[5] Nor is there any difference in the personality constellation of "coarctation," an inhibition of color and movement responses, which has been related to obsessive-compulsive and depressive adjustments, and which Brosin found as typical for a large number of medical students.[2] It seems, then, that the Rorschach method cannot be used in this way to delineate "the typical personality structure" of the medical student, assuming there is such, unless it can be shown on the basis of other criteria that medical students and divinity students do actually have similar personalities which distinguish them from individuals in other professional groups. In other words, if it can be shown that medical and divinity students have similar personality structures, this lack of results could not be taken as evidence that there is no "typical" medical student record. However, it is unlikely that there is any evidence for such an assumption.

The comparison of the best and poorest medical students according to formal scoring categories likewise reveals no significant difference in any category or combination of categories. However, there is a tendency for the better students to give more indications of differential reaction to the black-white cards (shading shock) than the poorer students, although this is not a significant difference. This type of reaction to the blots is usually taken as an indication of deep-seated anxiety and it has been suggested that it differentiates over-achieving from under-achieving medical students.[7]

Qualitative Comparison: The three judges were able to differentiate the records of the medical students from the divinity students to a degree considerably better than chance when the matching was done on a purely qualitative, intuitive basis. Judge A made two errors in four folders and no errors in three folders; Judge B made two errors in six folders and no errors in one folder; Judge C also made two errors in six folders and no errors in one folder. The probability of making only two errors in any one folder is approximately one in 10, and to do as well or better in all seven folders is much better than could be done by chance.* However, 26 different subjects in all (27 per cent) were misclassified by one or more of the judges; three judges making the same error in one case, and two judges making the same error in six cases.

After the sorting task, all judges reported that the basis of their scoring was primarily in content or interest pattern and only secondarily in terms of structure; e.g., constriction, compulsivity, etc. When precise anatomical descriptions were given or specific medical terminology used, records were classified as "medical." Similarly, records were classified as "divinity" if they included such content as descriptions of religious articles, vestments, etc. The corollary to this criterion was that records were classified as "divinity" if they included extremely vague or inaccurate anatomy responses. Thus it seems that even with this more global approach to the Rorschach records only superficial consistencies emerged. There was nothing apparent in basic personality structure, defenses, etc., which differentiated these two groups.

The sorting was considerably less successful when the judges tried to identify the most and least successful students. Judge A made six errors in each folder; Judge B, four in each folder; and Judge C, six errors in one folder and four errors in the second one. None of these sortings was performed on a better than chance basis. The judges felt that this was the more difficult of the two tasks they had been given. It was a difficult decision to make since it is uncertain what the relationship is between personality adjustment and academic success; i.e., how much disturbance can be tolerated in or is necessary for achievement. Recent research has shown that actually individuals with a high degree of anxiety tend to receive better grades than do students with less anxiety.[7] The results obtained in the comparison of the formal Rorschach scores tend to lend support to this finding since the better students give more evidence of shading shock which, as pointed out above, is a heightened sensitivity to anxiety-producing stimuli. This result was not statistically significant and is merely suggestive.

Conclusion

It would seem that the use of the Rorschach test in the selection of medical students or in the prediction of their success in medical school is not justified, since thus far its success in differentiating medical students from any other group of professional students has not been demonstrated, nor is there any clear indication of how good and poor students differ on the test. This should not be surprising, for to use this technique in student selection is to go far afield from its original purpose, which was to gain an understanding of thinking disturbances in maladjusted persons. Its use in the differential diagnosis of such individuals is not disputed here and, as a tool for separating out those applicants who are suffering from behavior disorders or who might potentially develop such, it may have merit. There is insufficient evidence, however, to warrant its continued use as a selection device in medical schools on more than an experimental basis.

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*There are 252 possible ways of sorting the protocols in each folder into five divinity and five medical students $\left(C^{10}_{5} = \frac{10.9.8.7.6.}{5.4.3.2.1} \right)$ and the possibility of getting eight correct for any one folder is $C^{5}_{1} \cdot C^{5}_{4}$ or $\frac{25}{252}$. The possibility of doing as well or better in seven folders is $\left(\frac{25}{252} \right)^{7}$.

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Editorials and Comments

State Residency Restrictions

THE PROBLEM CREATED by the common practice of limiting admission to a state-owned medical school to residents of that state has been an acute one since the termination of World War II. Before the war most of our state-owned schools had recognized the cultural advantages of having a cosmopolitan student body, had acknowledged their indebtedness to the other medical schools of the country who were admitting students irrespective of their residence, and reserved approximately 10 per cent of the places in their entering class for out-of-state students. At the war's close there was such a large backlog of acceptable applicants who were state residents that the majority of the state-owned medical schools ceased admitting out-of state residents altogether.

As the result of this unfortunate policy we find some states in which 70 to 80 per cent of the students applying for admission to medicine are accepted, while the average for all states is less than 52 per cent. The Medical College Admission Test's records, of course, are found to be lower in the schools that restrict their applications to residents of their state.

If the total number of students applying for admission to medical schools continues to decrease (it has decreased from 24,434 in 1949-50 to 14,678 in 1953-54, the admissions committees of state-owned medical schools definitely will have to make such decisions as: will they retain the strict state residency restriction and complete their quota with low standard students? Will they retain the restriction and leave the quota unfilled if there are not properly qualified state residents to fill it, or will they fill their quota with out-of-state students when they have already given preferential admittance to all qualified state residents applying?

It is of great interest to note that the decision in at least one of the state-owned schools has been to return to the practice of accepting out-of-state students rather than leaving their entering class quota unfilled or filling it with state residents who are not fully qualified.—D. F. S.

An Important Warning

APPARENTLY INFLUENCED BY the rapid decline in rates for reported primary and secondary syphilis—from 75.68 per 100,000 population in 1947 to 6.27 per 100,000 population in 1953—the federal government has reduced its appropriation for venereal disease control from $9,850,000 in 1953 to $5 million in 1954, with a proposed cut to $2,300,000 for 1955.

In a letter over the signatures of their presidents and secretaries, three national organizations—the American Social Hygiene Association, the Association of State and Territorial Health Officers and the American Venereal Disease Association—warn that such a sudden reduction in federal support is unwise and jeopardizes the success of the past years undertaken in high hopes and carried forward to this point with brilliant success.

Documenting their statements with appropriate tables, these organizations point out that "despite great strides in venereal disease control, complete control is not imminent," and express the belief that "the continuing program for the next several years should intensify specific control efforts by identifying and reducing pockets of high resistance, emphasizing early primary and secondary syphilis, giving more attention to the latent aspects of syphilis, and concentrating more effort against gonorrhea."

These associations unite in urging the federal government to take the following five steps now: (1) Resume its responsibility for venereal disease control. (2) Maintain as a minimum a $10 million federal budget for venereal disease control until a thorough study of needs has been made by the Congress. (3) Recognize that despite decreases in the *apparent* number of venereal disease cases in the nation, we may not be finding more than a fraction of the cases that exist, particularly in areas where venereal disease is known to be highly prevalent. (4) Adhere to a long-term plan for reducing federal support for venereal disease control selectively and gradually, on the basis of local needs. (5) Meet the continuing need for grants to the states for venereal disease control."

We are all seriously concerned about the national debt and the inability of our government to bring our annual federal expenditures within our annual federal income and gradually amortize that debt. All efforts bent to this all-important end merit the undivided support of all thinking citizens. From the facts presented by these associations, it would appear, however, that such severe and sudden reduction in federal support of venereal disease control might well prove a false economy in terms of health and welfare. Certainly a reconsideration of the whole problem is well justified before further cuts in federal aid in this important area are made.—D.F.S.

NEWS DIGEST

Heart Association Meeting

Representatives of affiliate and chapter heart associations throughout the country as well as physicians and research scientists attended the 30th annual meeting of the American Heart Association, at the Morrison Hotel, Chicago, March 29-April 4.

The week-long series of business meetings and heart program discussions culminated in a two-day scientific session of the association's newly formed Section on Clinical Cardiology. Dr. A. Carlton Ernstene, chief of medicine, Cleveland Clinic and Dr. Wright R. Adams, department of medicine, University of Chicago, alternated as chairman of the sessions.

Alpha Epsilon Delta Award

The first Distinguished Service Award of Alpha Epsilon Delta, the national premedical honor society, was presented to Dr. Aura E. Severinghaus, associate dean, faculty of medicine, Columbia University, for his outstanding contributions to premedical education. The award was presented on March 26, during the 10th national convention of the society, held at Indiana University.

Markle Scholars

The John and Mary R. Markle Foundation announced late in March the appointment of 25 scholars in medical science, all faculty members of medical schools in the United States and Canada. This was the largest number to be appointed in any year since the program began in 1948.

The fund has appropriated $750,000 toward the support of these doctors and their research, to be granted at the rate of $6,000 annually to the 25 medical schools where they will teach and carry on their research. A total of $3,950,000 has been appropriated by the fund toward the support of 136 doctors in 59 medical schools. The 25 scholars were selected from 60 candidates nominated by deans of medical schools, each of whom presented a five-year program for the candidate, indicating the school's plans for his progress.

AWMA Awards

The American Women's Medical Association will present a $100 cash award to each woman medical student who graduates in 1954 as the top ranking student of her class. This is the third consecutive year these awards have been presented.

The 1953 awards went to Dr. Lois C. Lillick, New York Medical College; Dr. Sylvia Griem, University of Wisconsin Medical School; Dr. Barbara Bates, Cornell University Medical College, and Dr. Barbara Anne Burke of Women's Medical College of Pennsylvania.

TV Program on Arthritis

The second in the 1954 spring series of "March of Medicine" network telecasts, presented by Smith, Kline & French Laboratories and the American Medical Association, will bring to a national audience a glimpse of current research on arthritis and rheumatism.

Scheduled for Thursday, April 29, at 10 P.M. EDT, the program will be carried over 78 NBC television stations. By means of live telecasts and film, the program will visit medical research centers throughout the country where work is under way on these two degenerative diseases.

This program continues a series which has included shows on heart disease, cancer, the AMA clinical session, and lastly, overweight. On June 24, a special report will be telecast from the scene of the annual meeting of the AMA in San Francisco.

American Psychiatric Association

The annual meeting of the American Psychiatric Association will be held May 3-7 in St. Louis, at the Kiel Auditorium. Several thousand of the APA's 7,600 members are expected to attend. Over 100 papers on recent developments in psychiatry will be presented, together with psychiatric films and exhibits.

Non-members are welcome to attend the scientific sessions. A $5 fee covers admission to scientific meetings throughout the convention.

Wayland Delano Wilcox

Wayland Delano Wilcox, 78, since 1915 editor and manager of the college department of Lea & Febiger, publishers, died March 9. He was a graduate of the University of Chicago, from which he received B.D., Ph.B. and Ph.D. degrees. Mr. Wilcox is survived by his wife, Agnes, and a son, J. Lyon.

Runyon Fund

The Damon Runyon Memorial Fund for Cancer Research allocated $52,800 in institutional awards for the month of March. This brings the total funds awarded to $7,620,286 in 429 grants.

Columbia University, the Utah State Agricultural College, the University of Chicago and Duke University were recipients of the March awards.

Passano Foundation Award

Dr. Homer W. Smith, professor and chairman, department of physiology, New York University College of Medicine, has been selected as the recipient of the $5,000 Passano Foundation Award for 1954.

On June 21, during the American Medical Association convention in San Francisco, a reception and dinner will be held in honor of Dr. Smith. The award is being made for his many contributions to the knowledge of the physiology of the kidney.

Rutgers Institute of Microbiology

The anniversary of the discovery of streptomycin in an obscure and crowded Rutgers University laboratory 10 years ago will be marked on June 7 with the dedication of the new $3,500,000 Institute of Microbiology. Royalties from the manufacture of streptomycin have amounted to more than $4 million, of which 80 per cent have been assigned to the Rutgers Research and Endowment Foundation. These funds were used for construction and equipment of the new laboratory.

Law-Medicine Center

A three-fold program of teaching, research and publication is under way at the new Law-Medicine Center at Western Reserve University in Cleveland.

Under the direction of Oliver C. Schroeder Jr., the center is offering two full-length legal medicine courses and an intensive one-week course in police science is being planned for June 21-26.

A study on homicide in the greater Cleveland area is the new center's first research project. Completing the three-fold program is a series of publications in the legal medicine field. The first volume in the series will be "The Physician in the Courtroom," to be published by the Western Reserve University Press this spring.

Social Work Forum

The 81st Annual Forum of the National Conference of Social Work will be held May 9-14 at Convention Hall, Atlantic City. The central theme of the forum will be "Social Welfare—1954—Inventory and Opportunity."

In addition to the regular meetings, there will be special lectures and 150 consultation and exhibit booths, where social work schools, publishers, governmental agencies and manufacturers will be represented. Approximately 30 pertinent films are scheduled to be shown during the forum.

International Surgical Congress

The International Medical Surgical Congress will be held in Turin, Italy, May 29-June 6. There will be three international expositions: Architecture of the Sanitary Arts, Medical-Scientific Film Festival and Scientific Exposition.

Nineteen hospital architects who work in Finland, France, Switzerland, United States, England, Germany, the Netherlands and Brazil have been invited to exhibit their work.

AHA Executive Director

Dr. Edwin L. Crosby, director of the Joint Commission on Accreditation of Hospitals and immediate past president of the American Hospital Association, has been appointed executive director of that association.

Dr. Crosby succeeds George Bugbee, who resigned as of May 1 to become president of the Health Information Foundation. Dr. Crosby also served as research director and a member of the medical task force of the second Hoover Commission on the organization of the executive branch of the government. Before joining the commission, Dr. Crosby was director of Johns Hopkins Hospital, Baltimore.

Foreign Operations Appointments

Sherman Comings, a sanitarian of the Lowndes County Health Department, in Valdosta, Ga., is scheduled to join the U. S. Operations Mission in Baghdad, Iraq, as a biologist.

Dr. Harold Frederiksen has been appointed to serve with the U. S. Operations Mission in Iran as a physician. Dr. Frederiksen has degrees from Vienna University, Liverpool University, Liverpool School of Tropical Medicine and Harvard University.

Keble B. Perine, on leave of absence as health officer for the town of Belmont, Mass., will join the U. S. Operations Mission in Pakistan as a public health sanitation advisor.

Albert L. Platz is slated to join the U. S. Operations Mission in Chelburi, Thailand, as a sanitary engineering consultant. After studying civil engineering at the Santa Rosa Junior College in California, he received the B.E. degree from Tulane University.

Sanford E. Shields, a Public Health Service officer, is scheduled to serve with the U. S. Operations Mission in Thailand as an entomologist. Commanding officer of the 24th Malaria Survey Unit in New Guinea and the Philippines during the war, he has been assigned to the Tennessee Department of Health at Nashville for the past seven years.

Robert E. Taylor has been assigned to the U. S. Operations Mission in Liberia as a sanitarian. He has served with the Sacramento City Health Department since 1949.

College Briefs

Albany

A new study of the ancient drug, colchicine, is being made under the direction of Dr. Frank G. Ferguson, chairman of the department of physiology. This strange drug, known as a treatment for gout for hundreds of years, is being re-examined to determine some of its other effects. Dr. Ferguson has noted that the drug can produce changes in muscles which appear to resemble the muscular dystrophies that occur in humans. The work is being done under a Public Health Service research grant.

Chicago Medical School

A total of $49,000 in new and renewed grants for research has been received recently. Among these grants was a renewal of $25,000 from the Public Health Service to Dr. Philippe Shubik for continuance of the cancer teaching program. A new three-year grant of $18,650 from the Atomic Energy Commission was awarded to Dr. Harold Koenig for a study involving radioactive phosphorus.

U. of Chicago

"Tagged" colchicine, a drug derived from plants grown at the university's "atomic farm" is useful in showing chemical differences between cancer patients and normal individuals, according to a report made by Edward J. Walaszek, fellow of the National Cancer Institute, to the Federation of American Societies for Experimental Biology, April 14 in Atlantic City.

The colchicine was derived from the autumn crocus, grown in air-tight greenhouses containing radioactive Carbon 14 in the form of carbon dioxide. In the cancer patients, only 0.2 to 6 per cent of the colchicine was excreted in an unchanged form, while the range in noncancer patients was from 15 to 50 per cent.

Cincinnati

Supplementing an $87,566 grant given in December 1953, the National Foundation for Infantile Paralysis has awarded an additional $67,840 to aid in polio research conducted by the university in conjunction with the Cincinnati Children's Hospital. The studies are under the direction of Dr. Albert B. Sabin, professor of research pediatrics.

University psychiatrists and surgeons are planning to launch for the first time in the United States a systematic study of the emotional problems of a large group of surgical patients to determine whether emotional and personal problems are playing any part in the patient's illness or response to illness. A $12,000 grant from the Public Health Service will finance the study. Dr. William A. Altemeier, director of the department of surgery, and Dr. Maurice Levine, director of the department of psychiatry, will head the study.

The patients studied will not be those referred by surgeons for psychiatric consultation because of obvious psychiatric conditions, but will be those ordinarily handled by surgeons without psychiatric study.

Colorado

Construction has begun on a $261,000 psychiatric outpatient clinic which will provide facilities for patients, both adults and children, who have emotional problems but do not require hospitalization. The two-story building will be constructed so that two additional stories could be added, if necessary in the future.

Dedication ceremonies for the Gerald B. Webb Memorial Building were held on March 12. The building was erected by the Colorado Foundation for Research in Tuberculosis in affiliation with the university, at a cost of $150,000. There will be an extensive library on tuberculosis and diseases of the chest, and the research of the foundation and medical faculty in tuberculosis will be centralized in the new laboratory.

Emory

The centennial of the school of medicine will be observed on October 4 and 5, with a two-day celebration that will include a formal academic ceremony, addresses by Dr. Stanhope Bayne-Jones, Dr. Alfred Blalock, Dr. John F. Fulton, Dr. Evarts Am-

NEW DIRECTORY PUBLISHED

The third edition of the Association of American Medical Colleges *Directory* is now available.

The new edition has been expanded in both size and scope. In addition to listings of institutional and affiliate institutional members and their administrative officers, it also contains names of department chairmen in 13 subject fields. Additional copies are available, at 50¢ per copy, from the Association headquarters, 185 N. Wabash Avenue, Chicago 1, Ill. A special price will be made for 10 or more copies ordered at one time for delivery at a single address.

BROSE GRAHAM, Dr. ALAN GREGG and Dr. CYRUS C. STURGIS, and the conferring of several honorary degrees. The Emory medical school grew from the Atlanta Medical College, founded in 1854.

Florida

The college of medicine expects to admit its first class in 1956, according to an announcement by Dr. RUSSELL S. POOR, provost.

The medical school, part of a comprehensive university health center, was given state legislative approval at the 1953 session and received a $5 million appropriation for the medical sciences building. Dr. GEORGE T. HARRELL, formerly professor in charge of research at Bowman Gray School of Medicine at Wake Forest College, has been named dean of the college of medicine.

Georgetown

A total of $30,113 in grants from the Public Health Service has been announced. The grants will be used for studies on retrolental fibroplasia, chemotherapy of essential hypertension, protein metabolism in the stabilized uremic unit and a renewal for a cancer training project.

Harvard

A Public Health Service grant of $215,000 for a five-year study of the emotional disturbances of childhood has been awarded to the Judge Baker Guidance Center and Children's Hospital. This work will be closely related to the cooperative program of study in the department of psychiatry of the medical school. Particular emphasis will be placed on the role of aggression in children. The study will be directed by Dr. GEORGE E. GARDNER, clinical professor of psychiatry; SAMUEL WALDFOGEL, director of research at the Judge Baker Center and Dr. DANE G. PRUGH, psychiatrist at the Children's Hospital.

A possible relationship between modern infant incubators, used in caring for prematurely born babies, and blindness often found in later life was analyzed recently by Dr. THEODORE H. INGALLS and Dr. NATESAIER PURSHOTTAM of the school of public health, in an article in the *New England Journal of Medicine.*

The retrolental fibroplasia results from lack of oxygen to the developing blood vessel system of the base of the eye. Curiously enough, the physicians report, the oversupply of oxygen in the modern incubator may bring about this lack, which it would be expected to prevent. The abnormal oxygen supply may affect the activity of enzymes which are necessary to the development of the eye.

Illinois

HERBERT B. MEGRAN was elected unanimously by the board of trustees to succeed PARK LIVINGSTON as president of the board, for a term of one year. Mr. Megran has been a member of the board for nine years.

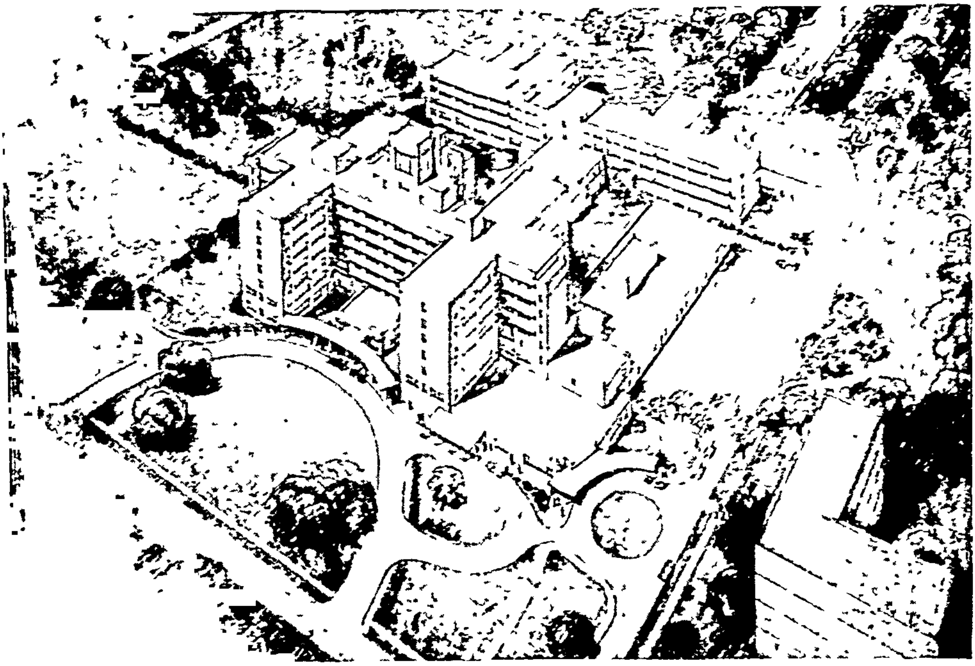
The George Washington Honor Medal was awarded to Mrs. ANNA T. HOWARD, assistant professor of nursing at the university, by the Freedoms Foundation. The medal was presented for "outstanding achievement in helping to bring about a better understanding of the American way of life during 1953."

A Public Health Service grant of from $14,600 to $16,300 annually has been received for study involving induction and experimental therapy of mouse leukemia. Another Public Health Service grant of $4,500 annually for five years will support an investigation concerning the development of tumor autonomy.

Kansas

Dr. DANIEL C. DARROW will assume his duties as Mercy Hospital professor of pediatrics of the school of medicine, beginning July 1. The Children's Mercy Hospital affiliated with the school of medicine last year, with a goal of improving undergraduate and postgraduate medical education in diseases of children.

Dr. Darrow will head the teaching and research program at Mercy Hospital and will spend most of his time



AN ARTIST'S conception of the new medical center, now under construction at the University of Missouri.

there. He was formerly professor of pediatrics at Yale University School of Medicine, and was the 1951 recipient of the Borden Award of the Academy of Pediatrics.

Dr. FRANK F. ALLBRITTEN JR. has been appointed professor of surgery and chairman of the department, beginning May 1. Dr. Allbritten was formerly associate professor of surgery of Jefferson Medical College and surgical director at the Barton Memorial division of the Jefferson Medical College hospital.

Dr. SANTIAGO GRISOLIA, assistant professor of physiological chemistry, University of Wisconsin, has been named the first McIlvain career investigator, effective May 1.

A grant of $45,000 has been made by Community Studies, Inc., from funds made available by the trustees of the Frederic Ervine McIlvain Memorial Fund. The research will be done in the field of heart disease. Dr. Grisolia will receive an academic appointment in the school of medicine as associate professor of medicine and biochemistry. He will be a member of the department of medicine and of the cardiovascular laboratory, with research space in the medical sciences building, designated as the McIlvain Laboratory.

Louisville

Dr. S. STEPHEN CHAPMAN, formerly instructor in the department of bacteriology and immunology at the Harvard Medical School, has been appointed associate professor of microbiology, effective July 1.

Medical Evangelists

The Multiple Sclerosis Society of Southern California has granted $19,000 to the college for the establishment of a multiple sclerosis diagnostic and rehabilitation clinic. The clinic will be staffed on a part-time basis by a neurologist, psychiatrist, social service worker, nurse, and by a full-time physical therapist.

The Public Health Service and the Air Force have provided $29,000 for the preparation of a monograph of "The Poisonous and Venomous Marine Animals of the World," by the school of tropical and preventive medicine.

Dr. VARNER JOHNS, associate dean, has assumed the presidency of the alumni association and Dr. ELTON MOREL, assistant professor of medicine, was named president-elect.

N.Y.U.—Bellevue

The university medical center's institute of physical medicine and rehabilitation has received capital gifts totaling $115,236.48. A contribution of $65,000 was received from the James Foundation of New York, Inc. An additional $25,000 was received from the Samuel H. Kress Foundation and $25,236.48 came from individual donors. The institute is under the direction of Dr. HOWARD A. RUSK, who is also associate editor of the New York *Times* and president of the American-Korean Foundation.

State U. of N.Y.—Brooklyn

Dr. JEAN A. CURRAN, dean of the college of medicine, has been appointed the first professor of the history of medicine. Dr. Curran plans to develop "the historical perspective essential to an understanding of the progress in medicine."

DR. ABRAHAM M. RABNER, formerly clinical professor in the combined department of neurology and neurosurgery, has been appointed professor and head of the division of neurology under the department of medicine. Dr. E. JEFFERSON BROWDER, who has been serving as professor and chairman of the combined department, will continue as chairman of a separate department of neurosurgery.

A new appointment as visiting professor of physiology from September 1, 1954, to August 31, 1955, has been awarded to Dr. SILVIO WEIDMAN, associate professor in physiology at the University of Berne, Switzerland. Dr. Weidman will succeed Dr. FRANS KLEYNTJENS, adjunct professor and acting chief of the department of neurology at Brussels University Hospital, who has been visiting professor in the department of physiology at the college since September 1953.

Dr. BENTON DAVIS KING, assistant chief of anesthesia at the Brooke Army Hospital, Fort Sam Houston, Texas, will assume his duties as associate professor of anesthesiology.

Dr. JAMES O. PINKSTON, assistant dean of admissions, has been promoted to full professor of physiology. Associate professorships were awarded to Dr. JACK GROSS, in anatomy; Dr. FLORENCE M. STONE, in microbiology, and Dr. JEROME LESTER GILBERT, in pharmacology

Pennsylvania

AIMS C. MCGUINNESS, dean of the graduate school of medicine, has been appointed clinical consultant for the new memorial hospitals of the United Mine Workers' Welfare and Retirement Fund. Dr. McGuinness will coordinate medical staffing arrangements for the 10 hospitals being built by the Memorial Hospital Association in Kentucky, West Virginia and Virginia.

After an extensive tour of Spanish hospitals and sanitariums engaged in the treatment of tuberculosis patients, Dr. ESMOND R. LONG has returned to the university's Henry Phipps Institute for the Study, Treatment and Prevention of Tuberculosis. Dr. Long went abroad at the invitation of the Patronato Nacional Antituberculoso, the tuberculosis section of the Spanish government's department of health. The tour was made as a representative of the International Union Against Tuberculosis, which is holding an important meeting in Madrid in September.

A grant of $31,432 has been awarded by the Commonwealth of Pennsylvania to the university for the initiation in the Philadelphia area of a medical program seeking solution of "the kindred problems attendant upon alcoholism."

The funds are being made available to the university by the division of alcoholic studies and rehabilitation of the state department of health. In connection with this program, a two-day forum was held April 28-29, with speakers on alcoholism and alcoholics, types of therapy for alcoholics, types of rehabilitation and alcoholism and the community. The research program will be directed by Dr. WILLIAM C. STADIE, chairman of the department of research medicine; the educational programs are to be conducted under the direction of Dr. JOHN P. HUBBARD, chairman of the department of public health and preventive medicine.

Special exercises commemorating World Health Day, April 7, were held at the university under the auspices of the school of nursing. The day is sponsored by the World Health Organization of the United Nations.

Dr. HERBERT R. HAWTHORNE, professor of surgery and chief of the surgical service of the graduate hospital and of the American Hospital for Diseases of the Stomach, has been appointed chairman of the department of surgery in the graduate school. Dr. JOSEPH P. ATKINS, clinical professor of bronchology, esophagology and laryngeal surgery, has been named chairman of the department. Both appointments are effective July 1.

Rochester

A new slow-motion, stop-action movie projector designed primarily to aid in the interpretation of x-ray motion picture studies of the human heart has been developed in the radiology department of the school of medicine and dentistry.

Designed by SYDNEY A. WEINBERG, associate in radiology and Dr. JAMES S. WATSON JR., lecturer in radiology, the projector has a remote push-button control, can be reversed instantly and permits projection at film speeds as low as six frames per second.

Stanford

A $210,000 grant from the Commonwealth Fund of New York will finance studies to explore possibilities for improving medical teaching at the school of medicine when it moves to Palo Alto.

Four committees, totaling 69 members from the faculty, alumni and trustees of the university, and from bay area communities, are already at work on preliminary studies. Another committee is considering plans for the future use of the medical school's buildings in San Francisco. In addition to the social, financial and personnel problems of moving the medical school, the study is aimed at carrying out a complete reevaluation of the medical curriculum and its objectives. A further aim, according to Dr. WINDSOR C. CUTTING, dean of the medical school, is the close integration of the school with the rest of the university.

U. of Texas—Galveston

The medical branch, with the assistance and cooperation of the Josiah Macy Jr. Foundation, held a three-day conference on medical and psychological team work in the care of the chronically ill. The conference was under the chairmanship of Dr. MOLLY HARROWER and Dr. PAUL HOLBROOK, wih Dr. FRANK FREMONT-SMITH representing the Macy Foundation and Dr. CHAUNCEY LEAKE, executive director, representing the medical branch.

The increasing importance of teamwork between internists, psychologists and psychiatrists was recognized and various ways in which it could be improved were discussed.

George Washington

The Lasdon Foundation has granted $10,000 to scientists at the university to promote further research in tuberculosis. The grant will be used for laboratory and clinical studies, which are being carried on at the District of Columbia General Hospital, to investigate the best means of using available and new drugs in the treatment of tuberculosis. One phase of the research is to find a means of maintaining long-term treatment by preventing the tubercule bacilli from developing resistance to the drugs used for treatment. Dr. MONROE J. ROMANSKY, associate professor of medicine, and Dr. SOL KATZ, adjunct clinical professor of medicine will direct the research.

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For the first time in 1954, medical college teachers and administrators, and other persons interested in medical education have the opportunity to become Individual Members of the Association.

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Tulane

Dr. WALLACE H. CLARK JR., instructor in pathology, and currently a pathologist for the U. S. Army at Fort George G. Meade, Md., has been awarded a $30,000 grant from the John and Mary R. Markle Foundation, with $6,000 allotted each year for five years.

The Rudolph Matas Award in Vascular Surgery, named after Dr. RUDOLPH MATAS, 93-year-old emeritus professor of surgery, was presented to Dr. EMILE F. HOLMAN, professor of surgery at Stanford University School of Medicine, and Dr. MICHAEL E. DEBAKEY, professor and chairman of the department of surgery, Baylor University College of Medicine. The awards were presented April 6, once in personal ceremonies by Dr. Matas and once in public ceremonies at the Tulane campus.

Dr. Holman received the award for his experimental and clinical pioneer work on arteriovenous fistulae and the effect of fistulae on blood circulation in general; for his experimental physiological - pathological work on ductus arteriosus and pulmonary stenosis and his original research and current work on aneurisms.

Dr. DeBakey received the award for his surgical treatment of aneurisms of the aorta through arterial transplants in which the aneurisms are removed, portions of new blood vessels are transplanted in patients' bodies and rehabilitation is brought about. The award was established in 1933.

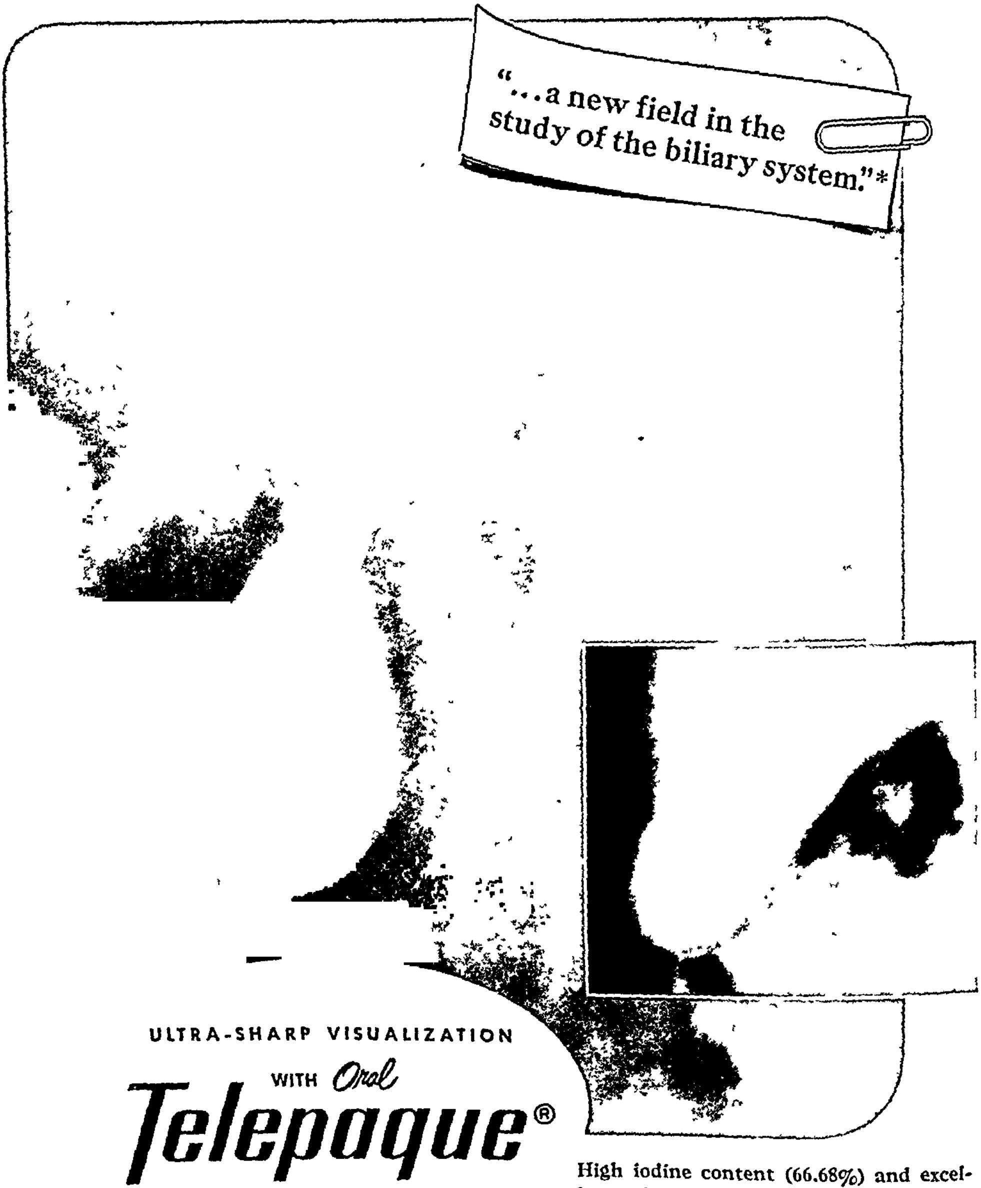
U. of Washington

A 24-million volt betatron for the treatment and study of cancer and other biological and physical problems has been installed in the new Barnard Free Skin and Cancer Hospital by the Edward Mallinckrodt Institute of Radiology of the university school of medicine.

Preliminary physical tests on the betatron are now being carried out by Dr. MICHEL TER-POGOSSIAN, physicist of the institute. It is expected that the instrument will be in full operation by June, under the supervision of Dr. WILLIAM B. SEAMAN, associate professor of radiology.

Yale

A weakened strain of "live" polio virus that is harmless to monkeys and which immunizes them against this disease can now be produced in the laboratory, according to Dr. JOSEPH L. MELNICK, associate professor of microbiology. This represents a step forward in the possible production of a live-virus vaccine against the paralytic polio. Dr. Melnick's work is supported by a March of Dimes grant from the National Foundation for Infantile Paralysis.



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Audiovisual News

AV Specialists Meet

Directors and specialists in all fields of AV education attended the annual five-day convention of the department of audio-visual instruction of the National Education Association, March 1-5. The consensus of the participants was that there is a big need for closer cooperation between the administrator and the instructor in planning the teaching program.

In a keynote address, Rensis Likert, director, Institute for Social Research, University of Michigan, declared that audiovisual methods have demonstrated their capacity in improving instructional efficiency. He pointed out that the effectiveness of audiovisual materials could be doubled if more research were given to audience characteristics.

Summarizing conference reports, Carolyn Guss of the Audio-Visual Center, Indiana University, said ". . . we are on the threshold of a great development in the production of materials and these materials will be used with increasing effectiveness in an environment in which the teacher has . . . freedom to teach and the learner has freedom to learn."

Surgical Film Wins Award

"Patent Ductus Arteriosis," produced for E. R. Squibb & Sons by Sturgis-Grant Productions, won the award for films in the medical sciences category of the Golden Reel Film Festival held in Chicago, April 1-3. "Patent Ductus Arteriosis" was one of 27 medical films shown at the festival. Certificates of merit were awarded to "Man to Man," produced by the Mental Health Film Board, and to "Molly Grows Up," produced by Medical Arts Productions.

"Man to Man" was made to train psychiatric aids. "Molly Grows Up" deals with the biological and social aspects of menstruation.

The Golden Reel Festival was the first film festival sponsored by the Film Council of America. More than 400 films produced or revised in 1953 were shown in 13 different subject matter categories.

Summaries of Film Reviews

What You Should Know About Biological Warfare

8 min., sd., b&w., 16 mm., 1951.

America's agricultural, industrial and human resources are shown to be vulnerable to bacteriological warfare. Germs, toxins and plant regulators are the three groups of BW agents which potentially may be used. Aerosols delivered from planes or submarines, or materials handled by enemy saboteurs are the sources of danger. Personal and domestic hygiene, home nursing, prompt reporting of sickness, and the following of precautions given by radio are stated to be the keys to discovery, identification and control of BW agents of attack and their human victims. Specific steps to be taken in control of epidemics are given, with emphasis upon allaying fear from rumors.

This brief motivational and orientational film seeks to present the problem of BW and to create confidence in America's ability to handle any BW assaults. The alarming possibility of combined CW and BW attack must be presented to professional groups. And the blithe confidence of the film's tone, perhaps good for laymen, must be minimized for medical men who must know the vastness of the medical implications of BW epidemics. Production is excellent, restrained and professionally well handled throughout.

As an introduction to many kinds of discussions by and with lay or professional groups, the film provides provocative material which must be built upon by the instructor in question. The simplicity of the facts given requires elaboration. Since a high percentage of accurate information on BW is of a highly restricted nature, additional teaching data will in most cases be rather speculative or deductive.—*D.S.R. and G.V.B. with MEND Panel, February 1954.*

Audience: Lay to professional audiences.

Production Data: Sponsor: Federal Civil Defense Administration, Washington, D. C.; **Producer:** Reid H. Ray Film Industries, Inc., Minneapolis, Minn.

Distribution: Regional Civil Defense Offices and Farm Bureau Mutual Insurance Cos., Columbus 16, Ohio, **Loan;** Twyman Films, Inc., 400 W. First St., Dayton 1, Ohio and Oregon State System of Higher Education, General Extension Division, Dept. of Visual Instruction, Corvallis, Oregon, **Rental;** United World Films, Inc., 1445 Park Ave., New York 29, N. Y., **Sale:** $19.75.

General Effects of Cold on Man

13 min.. sd., b&w., 16 mm., 1951.

Wet cold, cold with wind, and deep still cold are shown to be threats to troops in action. The problems of maintaining heat balance during cold exposure are diagrammed. At a research laboratory the constriction of rabbit ear vessels with cold precedes demonstrations of human volunteers who submit to experiments in a cold room. The function of shivering is illustrated in humans and monkeys, and is contrasted with voluntary exercise. In military action the soldier is given his "do nots" regarding food, clothing, and activity. Warnings are given against trench foot. Frost bite is seen, and steps to check it given. Protection of individuals by group action is stressed, as fighting men are seen in maneuvers in the cold.

This talking motion picture covers vital information concerning the rationale of cold protection, and the principles of such protection in the military situation. The film is organized around the narration; the pictures are rather disjointed and generally merely of illustrative or filler nature. Purely technical qualities of sound, camera, titles, opticals, etc. are adequate.

With professional audiences the weaknesses of the film's verbal-visual concept and organization will tend to vitiate the importance of the contents. Sub-professional audiences may obtain a general orientation to the problems of human protection from cold.—*D.S.R. and G.V.B. for MEND Program, March 1954.*

Audience: Sub-professional medical personnel.

Production Data: Sponsor-Producer: Armed Forces Medical Illustration Service and Signal Corps, U. S. Army Department.

Distribution: Commanding General, Attention: Signal Officer, Headquarters, First to Sixth Army (according to location of user) or to Director, Armed Forces Institute of Pathology, 7th & Independence Ave., S.W., Washington 25, D. C., **Loan:** (use Code No. TF-8-1690); United World Films, Inc., 1445 Park Ave., New York 29, N. Y., **Sale:** $19.03.

Modern Technics of Collecting Blood Samples

33 min., sd., color, 16 mm., 1951 (Revised 1953)

Following the adage "A laboratory test is no better than the specimen, and the specimen no better than the manner in which it was collected," venipuncture is performed by the open gravity method, with the Keidel-Sheppard vacuum tube, and with a syringe. In a new type of syringe, venous pressure helps to fill the barrel. The proper method for cleansing, rinsing, matching and sterilization of syringes precedes proper preparation of test tubes with and without anticoagulant. The vacutainer technique demonstrates that "taking blood is a biopsy." Five blood collection items are shown: Venipuncture, taking blood smears, splitting the specimen, the rainbow-stoppered multi-purpose kinds of vacutainers, the taking of multiple blood samples with one venipuncture. The method of mass taking of blood specimens (for public health work) and blood collection procedures (for blood bank use) are demonstrated.

This film covers a range of blood collection methods for various purposes, and shows the wide range of equipment developed by the sponsor. The content is almost a film atlas of this subject matter, stodgy and tedious in presentation and organization, lacking optimal visual analysis at many points, filmically static, and relying for continuity on a rather verbose narration which is often dissociated from the pictures. Notwithstanding, the essentials of the procedures are transmitted.

For teachers who may require film demonstrations of the many procedures included, the film will have value, whether used in whole or in part. For practitioners, the film will be a persuasive lesson on the vacutainer methods and equipment, besides refreshing basic techniques of venipuncture.—*D.S.R., 1954.*

Audience: Technicians, nurses, medical students.

Production Data: Sponsor: Becton, Dickinson and Co.; **Scientific Adviser:** Milan Novak, *Ph.D.*, M.D., University of Illinois; **Producer:** Mervin W. LaRue.

Distribution: Becton, Dickinson and Co., Rutherford, N. J., **Loan.**

Early Care of Plastic Surgery Cases. Wounds of the Hand

14 min., sd., color, 16 mm., 1945.

The importance of human hand function demands that the first principle of hand surgery in field hospitals shall be "save all you can." Operating on a woman's hand with several cleanly severed fingers, a blood pressure cuff produces a blood-free field which is cleaned, debrided, and split-skin grafted. At a combat station, a shrapnel wound of the hand is checked diagnostically, prepared, x-rayed, debrided; all foreign bodies are sought and removed; tendon repair is not advocated for the combat zone; a cut nerve is sutured together; primary closure by experienced operators is advocated; split skin grafts are utilized; and the wound is dressed. The role of the combat surgeon is shown to be one of preparation for the hand specialist later. A tendon repair after several weeks produces excellent function. Another hand, severely burned, is managed by plastic surgery.

As an introduction to the concepts and practices of field surgery of the hand, the film provides an orientation for field surgeons. Although surgical details vary in individual surgical practice, the principles are sound. The film is organized well, although there is some inconsistency in the content as judged by the title, and overall production is skillful.

For residents of surgery, for potential civil defense aid station surgeons, and for medical students, the film will be clear, provocative, and memorable. Obviously a surgeon with experience in hand cases will optimally prepare for and discuss the film's content.—*D.S.R. and G.V.B. for MEND Program, February 1954.*

Audience: Surgical residents, physicians for civil defense, senior medical students.

Production Data: Sponsor-Producer: Bureau of Medicine and Surgery, U. S. Navy Department, Washington, D. C.

Distribution: Chief, AV Training Aids Section, Bureau of Medicine and Surgery, U. S. Navy Department, 21st & E Sts. N.W., Washington, D. C., **Loan** (use Code No. MN-2715a); United World Films Inc., 1445 Park Avenue, New York 29, N. Y., **Sale:** $81.73.

Transportation of Casualties

26 min., sd., b&w., 16 mm., 1951.

The infantry goes into battle, and with it the medical service. In demonstrations, medical corpsmen show many kinds of carry techniques for all types of wounds, and for situations utilizing a single corpsman and two-man teams. Carriages by litter and by improvisations of all types are demonstrated up to mountainside engineering and travois poles. Liaison plane, glider and helicopter with stretcher pods are seen. The ambulance is shown in all its varied and improvised shapes from jeep to duck. Water carriers are seen. Hospital trains, box cars, ship evacuation and air transport culminate the mustering of the transportation items.

This survey of all the Army's ways of handling the wounded, from one man to hospital ships, trains and planes is a tribute both to Army organization and to the expensive waste of war that paradoxically invests so much in willful killing and praiseworthy preservation of life. Many excellent combat scenes enliven this atlas of medical transportation. Production skills are of professional calibre throughout, although the unnecessary dim music throughout would appear to be the compulsion neurosis of some Hollywood sound man afraid of silence.

For Army medical and non-medical audiences the film will provide an impressive compendium of shots of the many transportation services applied to casualties. For medical students the early sequences on patient carriage by individuals and by litter teams could provide helpful ideas of civil defense improvisations.—*D.S.R. and G.V.B. for MEND Program, March 1954.*

Audience: Army medical corps personnel.

Production Data: Sponsor-Producer: Armed Forces Medical Illustration Service and Signal Corps Service, U. S. Army Department.

Distribution: Commanding General, Attention: Signal Officer, Headquarters, First to Sixth Army (according to location of user) or to Director, Armed Forces Institute of Pathology, 7th and Indepedence Ave., S.W., Washington 25, D. C., **Loan** (use Code No. TF 8-1705); United World Films, Inc., 1445 Park Ave., New York 29, N. Y., **Sale:** $38.72.

Disaster on Main Street

9 min., sd., b&w., 16 mm., 1952.

The effect of war on Main Street Anywhere is shown to have been enormously altered by airplanes and the A-bomb. Main Street Great Britain's fiery encounter with the Luftwaffe in 1940 shows in action the new warrior of the industrial age, the civilian. The fearful bomb retaliation upon Main Street Germany is shown, with the failure of German civil defense. Raids on Main Street Japan

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[1] Margolin, S., and Tislow, R. Experimental and Clinical Efficacy of Trimeton and Chlor-Trimeton Maleate, Ann. Allergy 8:515, 1950.

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were tremendously effective because of civilian defense apathy even up to the culminating catastrophes of Hiroshima and Nagasaki. With our minds dulled by victories, the blunt question is posed of America: Could *your* Main Street cope with modern disaster?

This forthright and forceful appeal for civil defense preparation and against national apathy brings home the enormity of a potential atomic disaster, the critical role of civil defense organizations, and the penalties for failure to be prepared. The footage is from the past records of wars and disaster, the editing is intelligently done; but the restrained and excellent narration delivered by Edward R. Murrow is the spine of the film's substance.

As motivation for any group concerned with disaster in any capacity, this brief film cannot fail to carry its fateful if grim message. —*D.S.R. and G.V.B. for MEND Program, February 1954.*

Audience: Groups for Civil Defense.

Production Data: Producer: Castle Films, in cooperation with Federal Civil Defense Administration; **Narrator:** Edward R. Murrow.

Distribution: Regional Civil Defense Offices, **Loan:** United World Films, Inc., 1445 Park Avenue, New York 29, N. Y., **Sale:** $19.75.

The Preparation and Use of Human Plasma

32 min., sd., color, 16 mm., 1945.

An introduction shows a beach assault and its supporting medical care. In a Red Cross blood collection center a volunteer gives a pint of blood. The blood is tested in a receiving room and transhipped to a processing plant. Separation of plasma and pooling precede taking of sample for testing. Frozen plasma is desiccated in vacuo, and the dried plasma is sealed in cans, each with a matching can of distilled water and the requisite tubing and needles. In the beach attack, men are killed and injured. A corpsman treats a severe casualty, and in the field gives him a pint of reconstituted plasma, following all the proper steps for assembly of the plasma set. With the casualty responding, the corpsman fills out the plasma use report.

Virus hepatitis is a great hazard stemming from plasma prepared by the pooling method shown in the film, with probable virus preservation by the freezing and desiccation in vacuo. It is probable that storage of sterile plasma at room temperature for 6-9 months before processing, or some other method, is the answer to the grave problem of serum jaundice. The processing method shown here is probably obsolete. Film production is good in most details, and the simulation of battlefield administration is realistic enough to create the requisite motivation.

For medical corpsmen, medical students and nurses, the film provides a background on plasma preparation plus procedural information on the use of plasma kits. Possibly the film could be used in its parts in order to circumvent the obsolete processing methods.—*D.S.R. and G.V.B with MEND Panel, February 1954.*

Audience: Medical corpsmen, nurses, medical students.

Production Data: Sponsor: Bureau of Medicine & Surgery, U. S. Navy Department; **Producer:** Paul Hauce Productions, New York.

Distribution: Chief, AV Training Aids Section, Bureau of Medicine & Surgery, U. S. Navy Department, 21st & E. Sts. N.W., Washington, D. C.. **Loan:** (use Code No. MN-3543); United World Films, Inc., 1445 Park Ave., New York 29, N. Y., **Sale:** $189.38.

Soft Tissue Wounds

11 min., sd.. color, 16 mm., 1944 (Medicine in Action #4).

Four cases of shrapnel wounds occurring during the Italian campaign are presented. The first case, a shell fragment in the hamstring muscle, is opened, debridement performed and the piece removed under spinal anesthesia; after eight weeks healing the soldier is returned to duty. The second case, after removal of a superficially located fragment in the back, is handled by secondary closure and discharge to duty after six weeks. The third case, a shell fragment in the leg, is opened and debrided, with foreign body removal, and skin-grafted after secondary closure before return to duty. The fourth case, multiple wounds of arm and hand from an antipersonnel mine, is opened, debrided and cleaned, allowed to heal by granulation; the wound is later excised in the OR and closed to produce a superior functional and aesthetic result. The healed cases are shown as a summary.

This film recitative of four relatively similar soft tissue wounds shows good and expeditious war surgery, with rapid return to duty and excellent functional results. Camera, editing and narration are workmanly for this bit of medical reportage, despite the inadequate color and photography typical of wartime field shooting.

For medical students this is an excellent brief motivational and instructional unit in the surgery of trauma, emphasizing the simple principles of primary and secondary management of this general type of wound, but seeking to avoid step-by-step methodology as such.—*D.S.R. and G.V.B. with MAVI Panel, February 1954.*

Audience: Medical students, interns.

Production Data: Sponsor and Producer: Bureau of Medicine & Surgery, U. S. Navy Department.

Distribution: Chief, AV Training Aids Section, Bureau of Medicine & Surgery, U. S. Navy Department, 21st & E Sts. N.W., Washington, D. C., **Loan:** (use Code No. MN-3726d); United World Films, Inc., 1445 Park Ave., New York 29, N. Y., **Sale:** $58.54.

General Effects of Heat on Man

19 min., sd., b&w., 16 mm., 1951.

Heat in various life situations is shown to be friend or enemy. At Fort Knox Research Laboratory, volunteers undergo treadmill experiments in the presence of environmental heat and humidity; the roles of perspiration and its evaporation, of fluid and salt intakes are indicated. A tank crew broken down in desert maneuvers demonstrates adjustments to heat; a lost squad of soldiers provides a case of heat exhaustion. In a desert camp a soldier brings on a heat stroke through carelessness, and is treated for its relief. In the laboratory on the treadmill a man walks for hours when properly supported by fluid, salt and heat-protective devices. In the humid jungle and in the close interior of a tank, soldiers collapse from heat exhaustion.

This illustrated lecture film covers many critical and valuable points of man's self protection from heat. Film facts are those developed or authenticated by methodical laboratory work. However, the film's development of the material is quite inadequate for either scientific or lay audiences. Film direction of the simulated desert situations is unconvincing and unsatisfactory, and the fragmentary laboratory sequences are unfortunately based on verbal rather than visual continuities. Purely technical film qualities of sound, camera, opticals, titles, etc. are good enough.

For medical professional groups the film is neither clear enough nor analytical enough nor of sufficient factual depth to warrant curricular use. For sub-professional groups there is orientational value to be gained.—*D.S.R. and G.V.B, for MEND Program, March 1954.*

Audience: Sub-professional groups, medical corpsmen.

Production Data: Sponsor-Producer: Medical Illustration Service and Signal Corps, U. S. Army Department; **Technical Assistance:** Field Research Laboratory, Fort Knox, Kentucky.

Distribution: Commanding General, Attention: Signal Officer, Headquarters, First to Sixth Army (according to location of user) or to Director, Armed Forces Institute of Pathology, 7th & Independence Ave., S.W., Washington 25, D. C., **Loan:** (use Code No. TF 8-1691); United World Films, Inc., 1445 Park Ave., New York 29, N. Y., **Sale:** $19.03.

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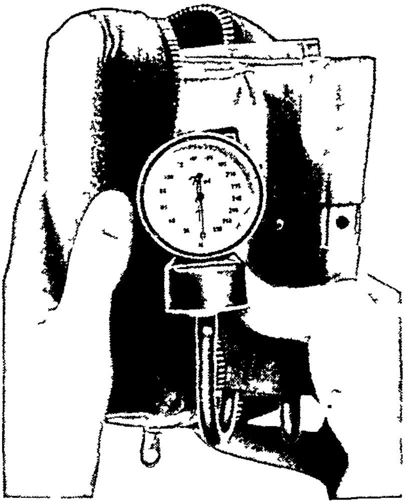

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Book Reviews

The Billroth I Gastric Resection

H. G. Moore Jr., M.D.; and Henry N. Harkins, M.D., Ph. D., F.A.C.S. Little, Brown & Company, Boston, 1954. 137 pp. with index. $7.50

Students of the problems relative to the surgical therapy of peptic ulcer should welcome this volume. It is far more than a treatise concerned with a technical description of an operative procedure. The book begins with an excellent historical background of the development of gastric resection in the treatment of peptic ulcer. This is followed by a concise discussion of the physiological principles upon which the operation is based. Sections are devoted to selection of patients and to management of patients before and after operation. The description of the technique employed in performing the Billroth I operation is well presented in the text and is accompanied by lucid illustrations.

The chapter entitled *Postgastrectomy Syndromes* is stimulating and worthy of particular consideration. The authors have presented a carefully organized discourse on the physiological alterations subsequent to resection of the stomach. Consideration of variation of the surgical approach to gastroduodenal ulcer does not stem from a significant failure of current procedures to protect against recurrent ulceration but rather from the development of disturbances in gastrointestinal physiology. The authors have assembled and evaluated the evidence which has been presented to explain such aberrations in function after gastric resection and have made an objective analysis of the problem. It would seem that this volume has resulted in a compact analysis of the present status of gastric resection for gastroduodenal ulcer, rather than merely as a discussion of a particular method.

Biographical sketches of the men who have contributed to the development of gastric surgery in the past are appended. An excellent and comprehensive bibliography is included. This monograph is recommended to those interested in the surgical treatment of peptic ulcer and, in addition, should serve as a valuable reference for medical students.

John M. Beal, *Cornell*

The Chest, 2nd edition

Leo G. Rigler, M.D. The Year Book Publishers, Inc., Chicago, 1954. $8

The second edition of "The Chest" is a practical handbook in the full sense of the term. As before, it is small in size but filled with a wealth of information. Naturally, it cannot be very detailed but the essentials of most every chest disease are discussed and illustrated. It is a distinct improvement over the first edition, since it covers material not adequately treated in the earlier book.

It is ideal for the medical student, general practitioner or the new resident, since it makes available so much concise information in such a small space, omitting the questionable, which is often confusing to the uninitiated.

There will be disagreement with some of Dr. Rigler's ideas and procedures, such as his recommendation for "spraying 10 per cent cocaine into the back of the mouth" for anesthesia in bronchography. On the whole, however, it is believed that this book will meet with almost universal approval and will undoubtedly find a wide use.

The illustrations, though small, are well chosen and clearly reproduced.

John F. Roach, *Albany*

Psychosomatic Case Book

Roy R. Grinker, M.D.; and Fred P. Robbins, M.D. The Blakiston Company, Inc., New York, 1954. 323 pp. with index. $6 50

The title of this book underplays its scope. The book is more than a collection of case histories. It includes a thoughtful review and discussion of the major theoretical concepts of psychosomatic medicine, the findings of recent experimental and clinical research and a detailed discussion of some of the practical and theoretical problems of diagnosis and therapy. This material is systematically presented and is well integrated with a wide variety of case material. The use of case histories throughout the book (there is a total of 79) has the advantage of graphically illustrating and objectifying the particular viewpoints and ideas expressed in the text.

The authors have intended to reach by the language and form of their presentation "students at many levels of those professions concerned with sick people." They have been as successful as anyone could be in making themselves understandable to such a large audience. Some readers may not comprehend at first perusal the significance or advantage of such terms as "transactional processes" or "field concepts." But by elaboration and lucid examples, these and other seemingly obstruse terms tend to become clarified. Many readers will be pleased to learn that the "field concept" of psychosomatic medicine is essentially a restatement of the multiple factor theory of etiology of health and disease. The authors espouse this working hypothesis because of a recognition that modern theoretical etiological concepts in psychosomatic medicine are not as yet substantiated and that they often disregard important empirical data. Ideas, for example, that single complex factors, such as environmental stress, a specific emotional constellation, a personality profile, or social change have a cause and effect relationship with a specific organ function or dysfunction are criticized as being specious and oversimplified. The authors' own viewpoints on the theoretical problems in etiology and pathogenesis of illness—from the psychosomatic point of view—are sensible and instructive.

The eight chapters on "Special Syndromes" are good and include well written summaries of the latest information available on pertinent experimental and clinical research. One unfortunate weakness in this and other sections is that there are more errors than there should be in the bibliographical references and annotations.

The three chapters on "The Problems of Diagnosis" and three chapters on "Therapy" are outstanding. They, with the chapters on "Special Syndromes," supply a wealth of stimulation and information not only in the practical formulation and management of problems in the practice of general medicine and psychiatry, but in the furthering of research in psychosomatic medicine. One fruitful research lead, for example, is the observation that depression or psychological defenses against depression may be a psychological index of the seriousness of somatic and visceral vulnerability to disease and to the amount of frustration of infantile constitutional needs an individual has experienced.

The book should be read in full detail by people who are beginning students in comprehensive medicine and who have a relative paucity of clinical material from which to make their own observations. It is first-rate reading, in a more selective fashion, for those who have access to clinical material and are familiar with the current concepts and syndromes in psychosomatic medicine.

Louis A. Gottschalk, *Cincinnati*

Clinical Endocrinology

Karl E. Paschkis, M.D.; **Abraham E. Rakoff**, M.D.; and **Abraham Cantarow**, M.D. Paul B. Hoeber, Inc., Medical Book Department of Harper Bros., 1954. 768 pp.

This book is intended as a guide to practicing physicians. It is written from the standpoint of the chemistry and physiology of the various endocrine glands rather than from the clinical pictures of endocrine disturbances as they present in an physicians' office. Separate chapters are devoted to individual endocrine glands. A separate chapter is included on obesity. The last chapters on procedures and methods of study and commercial hormone preparations are more in the nature of a list than of detailed directions.

In the section on any individual gland, there is the usual embryological, anatomical, chemical and physiological discussion in the opening chapter. Chapters on hyper- or hypofunction may then follow. By this technique there is a good bit of repetition and occasionally, the approach is not too critical. As an example, in the discussion on myxedema, statements are made that thyroid hormone cures the disease and will repair coronary arteries.

The format is very pleasant. The type is readable, the paper excellent and the photomicrographs are well reproduced. There are references at the end of each section which include both classical and recent articles.

The Psychiatric Aide

Alice M. Robinson, R.N., M.S., director of nursing service and nursing education, Boston State Hospital. J. B. Lippincott Company, Philadelphia, 1954. 174 pp. with index. $3

The training of psychiatric aides for service in mental hospitals should benefit a great deal from this book. Its approach is to give the aide an understanding of his part in the care of the mentally ill.

Three technical areas are briefly discussed: growth and development, behavior problems and special therapeutics. The remainder of the book emphasizes the importance of the aide's having a sense of responsibility toward his job—the hospital and the hospital staff, the patient's family, and, *most* important, the patient and how to put this feeling of responsibility into practice.

The book will be useful not only in training aides and student nurses who care for psychiatric cases, but could also be given to relatives of patients to increase their understanding of the care and treatment being given.

S. C.

Pharmacology, 4th edition

J. H. Gaddum, Sc.D., F.R.S., M.R.C.S., L.R.C.P., professor of pharmacology, University of Edinburgh. Oxford University Press, London, 1953. 562 pp. with index. $8

This text is distinguished by the fact that the author has recognized the unavoidable inadequacy of the information in such a brief survey and has provided means for the student to integrate and amplify his knowledge of pharmacology with facility.

This has been accomplished, first, by including in the introduction a classified list of the commonly available important sources of information; second, by including many cross-references in the textural material; third, by including salient references to the literature as footnotes at the bottom of each page and fourth, by providing an unusually complete index. Other features worthy of commendation are the illustrations, the appendix of chemical names, and the section on quantitative pharmacology.

Like most surveys of this subject, this one tends to be somewhat dogmatic but is relatively free from errors. The author has neglected some recent work on the distribution of body water, nalorphine, mercaptomerin, primaquine and the toxicity of dihydrostreptomycin. His treatment for acute morphine poisoning is antiquated. One would prefer to have less emphasis on chloroform, nicotine, quinine and locally applied sulfonamides and somewhat more emphasis on antiepileptic drugs, chloroquine, primaquine, the toxicity of pyrimethamine, and the use of oral penicillin.

The book is well organized and is written in a lucid and readable style. It probably contains sufficient information to satisfy the average medical student and stimulate the better student to further reading. The printing, binding and format are good though the glossy paper is not a very happy choice.

Earl H. Dearborn, *Boston*

A History of the Theories of Aether and Electricity

Sir Edmund Whittaker, F.R.S., honorary fellow of Trinity College, Cambridge. Philosophical Library, Inc., New York, 1954. 307 pp. with index. $8.75

This book describes the revolution which occurred in physics between 1900 and 1926. It includes the discoveries of Special Relativity, the older Quantum Theory, General Relativity, Matrix-Mechanics and Wave-Mechanics.

Some specific general problems discussed are: the discoveries which led up to our present knowledge of subatomic structure, the transmutation of matter, the relative motion of the earth and aether, the behavior of electric charge and current, Relativist dynamics, pure temperature radiations, the introduction of photons, difficulties connected with the Newtonian law, Einstein's principle of equivalence, connection of the Einsteinian and Newtonian theories, the expanding universe, therionics and photoelectricity, exchanges of energy between radiation and molecules, magnetism and electromagnetism, and those important subjects which arose in connection with matrix and wave-mechanics.

In the general field of biology the book should be of considerable interest to the biophysicists and radiologists. However, many workers in physiology, biochemistry, and general areas involving electrical measurements will want to read this book.

R.A.D.

Practical Methods in Biochemistry, 6th edition

Frederick C. Koch and Martin E. Hanke. The Williams & Wilkins Company, Baltimore, 1953. $5.

In the preface to the first and sixth editions, it is implied that this book is primarily designed for the use of medical students. Although it contains a wealth of material, valuable to the professional biochemist, it is the opinion of the reviewer that it does not meet the needs of modern medical biochemistry.

Thirty years ago, there may have been more justification for the numerous qualitative tests which are given in detail in the early chapters. In recent years, however, so much new material has been made available in the field of biochemistry, especially in relation to the nature of enzyme systems, that it would seem highly desirable to utilize more of the excellent qualitative and quantitative material in this book to illustrate general principles or important reactions in biological systems.

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Edited by GEORGE F. REDDISH, Ph.D., Sc.D. (Hon.)

St. Louis College of Pharmacy and Allied Sciences; and Lambert Pharmacal Company Division of the Lambert Company, St. Louis, Mo. 30 Contributors

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Chapter five, dealing with hydrogen ion activity, pH, and buffers is well done; but a less rigorous treatment, with more emphasis on the relationship between the material in this chapter and that on the regulation of body neutrality, would be more suitable for the average medical student.

In view of the wide use of the photoelectric colorimeter in industrial and clinical laboratories, it is surprising that so little attention is devoted to the general principles of light absorption measurements. Many of the methods for blood constituents are still based on measurements with the visual colorimeter, although most clinical laboratories now employ procedures utilizing photoelectric colorimetry.

The completely new chapter dealing with the determination of biological materials by the use of the Van Slyke-Neill manometric apparatus is well done and will be of great value to many workers, since this material is widely scattered in the literature. The need, however, for such a chapter in a laboratory manual for medical students is debatable. The same criticism applies to the chapter which gives detailed directions for the quantitative determination of most of the vitamins. A colleague of the reviewer, who is well versed in the field of microbiological analysis, commented on this chapter of the book, "In general, the treatment is excellent but one who has not had experience in this field could not judge which of the experiments were designed primarily for classroom work and which for general application in the field."

Although some parts of this text need to be modernized, it contains a wealth of valuable information for the beginning student as well as the teacher of biochemistry. It might serve very well as a reference text for the project type of teaching that is gaining in popularity in the field of medical biochemistry.

Nerve Impulse

David Nachmansohn, editor. Transactions of the Fourth Conference, March 4-6, 1953, Princeton, N. J. Josiah Macy Jr. Foundation, New York, 1954. 224 pp. $4

"These conferences are designed not to present neat solutions to tidy problems, but rather to elicit provocative discussion." This prefatory remark nicely sums up the significance of this stimulating little volume. The fourth conference and the book derived from it have very adequately accomplished their designated purpose.

In the borderland of neurophysiologic research, physical chemistry and biology are forcibly conjoined. In these pages are considered such a physical and biological purview of certain aspects of three branches of sensory physiology, under the titles "Mechanism of Vision," "Mechanism of Hearing" and "Sensory Receptors." Brief presentations of new material on these three subjects are made by George Wald of Harvard, Hallowell Davis of St. Louis, and Yngve Zotterman of Stockholm. Incisive questions and informed discussion by members of the distinguished panel make up a larger portion of the volume.

The conference is recorded almost verbatim, as a result of which the style is hardly literary. That discussants occasionally stray from the immediate point provides a graphic demonstration of the semantic difficulties raised by the problem of sensation. Informal discussion of this type constitutes one of the main values of all scientific congresses. This book provides the reader with the unpremeditated comments which at most meetings are available only to a fortunate few.

In common with the volumes prepared from the three previous conferences, this is essential reading for all with neurophysiological leanings. Those with other physiological interests will equally find stimulation and semantic meat.

Bill Garoutte, *California*

Books and Pamphlets Received

(As space permits, those with the greatest interest to our readers will be reviewed)

Aids to Anaesthesia

Victor Goldman, F.F.A.R.C.S., D.A., L.R.C.P., M.R.C.S. Bailliere, Tindall & Cox, 1954. 318 pp. with index. $2.25

The Billroth I Gastric Resection

Horace G. Moore Jr., M.D., and **Henry N. Harkins,** M.D., Ph.D., F.A.C.S. Little, Brown & Company, Boston, 1954. 137 pp. with index. $7.50

Congenital Heart Disease

Henry S. Kaplan, M.D., professor of radiology, Stanford University School of Medicine; and **Saul Joel Robinson,** M.D., clinical instructor in pediatrics, Stanford University School of Medicine. McGraw-Hill Book Company, Inc., New York, 1954. 117 pp. with index. $12.50

A Doctor Talks to Women

Samuel Raynor Meaker, M.D., Fellow of the American College of Surgeons. Simon & Schuster, New York, 1954. 222 pp. with index. $3.95

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230 Pages, 124 Illustrations. Size: 8½ x 11 in. Price, $12.50

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Current Therapy, 1954

Edited by **Howard F. Conn**, M.D. W. B. Saunders Company, 1954. 850 pp. with index.

Manual of Clinical Mycology, 2nd edition

Norman F. Conant, Ph.D.; **David Tillerson Smith**, M.D.; **Roger Denio Baker**, M.D.; **Jasper Lamar Callaway**, M.D.; and **Donald Stover Martin**, M.D. W. B. Saunders Company, Philadelphia and London, 1954. 432 pp. with index.

Mayo Clinic Diet Manual

Edited by the Committee on Dietetics of the Mayo Clinic. W. B. Saunders Company, Philadelphia and London, 1954.

Methods in Medical Research, Volume 6

J. M. Steele, Editor in chief. Year Book Publishers, Inc., 1954. 257 pages with index. $7

New and Non-Official Remedies, 1953

Issued under the direction and supervision of The Council on Pharmacy and Chemistry, American Medical Association. J. B. Lippincott, Philadelphia, 1953. 517 pp. with bibliography, $2.65

Nobel Prize Winners in Medicine, 1901-1950

Lloyd G. Stevenson, M.D., Ph.D. Abelard Press, Inc., New York, 1954. 283 pp. with index, $6.50

Readings in the Theory and Practice of Medical Social Work

Edited by **Dora Goldstine**. The University of Chicago Press, 1954. 342 pp. with index. $5

Science Book of Wonder Drugs

Donald G. Cooley. Pocket Books, Inc. Published in cooperation with Franklin Watts, Inc. 238 pp. 35c

Textbook of Organic, Medicinal and Pharmaceutical Chemistry, 2nd edition

Charles O. Wilson, Ph. D. and **Ole Gisvold**, Ph.D. J. B. Lippincott Company, Philadelphia, 1954. 774 pp. with index. $10

Virus and Rickettsial Infections

Frank W. Hartman, M.D., **Frank L. Horsfall Jr.**, M.D., and **John G. Kidd**, M.D. The Blakiston Company New York, 1954. 461 pages, $7.50

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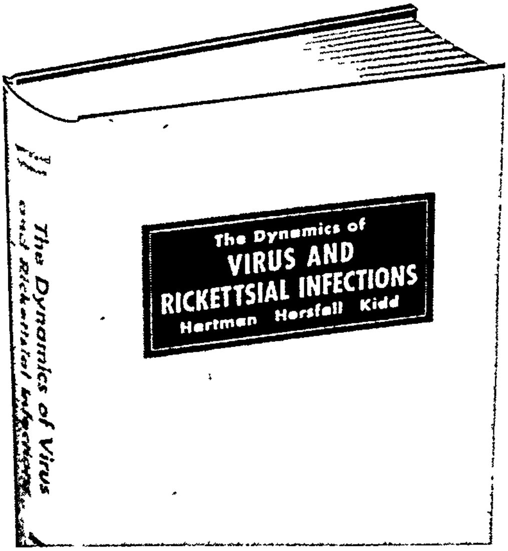

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Information for these columns should reach the Journal office, 185 N. Wabash Ave., Chicago 1, not later than the 10th of the month preceding publication.

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• **Physiologist:** M.D., associate professor, man, age 35, married, Swiss. Research for 7 years in respiration and circulation in Switzerland, U. S , England and Germany. 7 years teaching experience. Background in math, physics and chemistry. Prefers position in research or teaching for about 3 years. Publications and references. Available in autumn 1954 Address: A-103.

• **Microbiologist:** Desires graduate research fellowship or assistantship permitting study toward Ph D degree. A.B , M S in bacteriology plus 2 years of graduate study toward Ph D. completed. Research experience in therapy of parasitic infections and bacterial physiology Numerous publications and member of Sigma Xi. Presently assistant professor of microbiology in small college. Available in July 1954 Address: A-104

• **Biochemist-Physiologist:** Ph.D , age 27, 3 years teaching experience, research on cellular and blood thymo-nucleic acids, relationship to stress and tumor activity. Interested in working toward M D. degree. Address· A-105.

- **Anatomist:** Ph.D., 33 years old. Has taught in recognized medical school. At present executive position in pharmaceutical industry. Wishes to return to academic profession. Has taught all fields of anatomy; interested in research. References; publications. Address: A-106.

- **Pharmacologist:** Male, age 33. Ph.D. Minors: biochemistry and physiology. 1 year graduate teaching and research assistant. Teaching and research position with medical, dental or pharmacy school pharmacology department desired. Available immediately. Address: A-107.

- **Pharmocologist:** M.D., Ph.D., married. 5 years teaching experience, active in research; publications. Desires position teaching with research or research only. Address: A-108.

- **Internist:** Man. Age 42. M.D., Ph.D., F.A.C.P. More than 15 years experience in teaching, research and top-level administrative responsibility. Would like permanent position involving some teaching and/or clinical investigation. Address: A-109.

- **Anatomist:** Ph.D. in medical science, major in anatomy, 1954. Married. Age 31. Would like permanent teaching-research position at medical school or research institute. Extensive background in preclinical courses including pathology. 4 years teaching experience as fellow in histology and embryology in medical school. Keen interest in histochemistry and endocrinology. References. Available June 1, 1954. Address: A-110.

- **Surgeon:** 38, married, veteran. Diplomate of the American Board of Surgery. Training in general surgery with fellowship in tumor surgery. Background of research in biochemistry. Desires teaching position with opportunity for research; U. S. or foreign. Available July 1. Address: A-111.

- **Orthopedic Surgeon:** 36; certified; university trained; M.S. (orthopedic surgery) experience in traumatic surgery and rehabilitation of severely disabled. Seeks association with diplomate and university hospital affiliation. Address: A-112.

- **Physiologist—Microbiologist:** Man, Ph.D., 30, veteran. 7 years experience in teaching physiology, microbiology and histology, medical school level. Member of scientific societies. Desires teaching fellowship with opportunity to work for M.D. in return for tuition and stipend. Prefer Canada or U. S. Goal—radiology. Available in fall. Address A-113.

- **Pharmacologist-Physiologist:** M.S., Zoology; Ph.D. expected June 1954. Experienced in pharmaceutical research, teaching experience in pharmacy during army service. Desires research and teaching position in physiology and pharmacology. Special interest in endocrinology. Member scientific societies, Sigma Xi. Publications; references. Address: A-114.

- M.D., M.P.H.; Diplomate of Board of Public Health and Preventive Medicine desires to head department of Public Health and Preventive Medicine in medical school. 14 years varied experience in field combined with teaching at undergraduate and graduate levels. Capable of integrating this subject with rest of medical school curriculum. Address: A-115.

- **Internist-Cardiologist:** M.D., 35, family. 7 years of university hospital training, includig 4 years in cardiac laboratory. 30 publications. Certified in subspecialty. Now assistant professor of medicine. Seeking change of location. Prefers full-time permanent academic position. Address: A-116.

- **Physiologist-Endocrinologists** Man, 31, Ph.D. 5 years experience in teaching and research at Harvard University. Seeking full-time academic position. Extensive experience in physiology, general endocrinology, endocrinology of reproduction, human heredity, research methodology, histology and zoological sciences. Will accept administrative duties and responsibilities. Salary secondary to good future. Address A-117.

- **Histologist-Histochemist:** Ph.D. Harvard; young man, teaching and research experience. Publications; member of scientific organizations. Interested in obtaining teaching or research position in eastern U. S. Address: A-118.

- **Laboratory Supervisor:** Administrative and/or teaching position in medical technology. 10 years supervisory experience. B.S. in bacteriology. Graduate credits in biochemistry, histology and pathology. Laboratory officer, Sanitary Corps, Medical Department, U. S. Army 4 years (captain). Publications; references. Seeks stimulating position, preferably with academic affiliation. Address: A-119.

- **Surgeon:** 32; American Board of Surgery certified. Married. Interested in academic career; category 4; prefer job with limited private practice privileges, but will consider any full-time position without private practice allowances. Address: A-120.

A Department of Internal Medicine

"My business is to attend the sick and to aid the studies of those who seek the knowledge of disease at the bedside of the patient."—Latham

WILLIAM BENNETT BEAN

THE MOST DISQUIETING function of the mind is to force itself out of the soothing security of the ruts of daily existence to try the broad perspective of a general view. That such toil is a duty of teachers is forgotten or shrugged off. Not since the memorable deathbed letter of Francis Peabody to Warfield Longcope, later published as "The Soul of the Clinic," has anyone made an effort to set forth the problems and philosophy of a department of internal medicine along comprehensive lines. The remarkable changes of the last 25 years pose new difficulties for us. To some of them, rather than any elaboration on Peabody's magnificent theme, my attention is aimed.

In an age of complexity and perplexity we are timid about coming to grips with basic principles of philosophy. This characterizes our time. There is a dearth of even simple maps and direction finders for the instruction and edification of those who hopefully undertake new academic positions in medicine. Specifically, there is currently no digest, compendium or *vade mecum* which sets forth the principles and problems whose often erratic interactions are the daily bread of a department of internal medicine. Lacking such a guide, departments run their course influenced variously by tradition, strong or weak personalities, local circumstances, improvisation, habit or coasting along the downward slope of least resistance. I* am presenting the notions expressed here with no illusion that they give final answers to searching questions. They may not even provide adequate guides. Rather, they are to give the uninitiated some idea of the types of problems, the concerns and the goals of members of a particular department. This may help junior associates and those in adjoining fields understand what kind of a race it is rather than how to win it. To them

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Dr. Bean is head of the department of internal medicine of the college of medicine and the University Hospitals, State University of Iowa.

*Some people are made terribly uneasy by the first person singular, and one of the sorry results is that much medical writing is stiflingly ambiguous, written in the passive voice and subjunctive mood. In this era of ghost writers I will say my piece so that the reader will know at least who is talking. The faults and errors are mine too. I am indebted beyond the possibility of thanks to members of the departmental and resident staffs for their critical help in reading the many drafts of this paper; but even more for their aid in continuing the hard process of my own education. A further debt to earlier teachers, colleagues, medical schools and hospitals is exorbitant, growing and can never be paid.

rather than to my colleagues, contemporary inmates of many an ivory tower, it is directed. Its clues might help a new department head avoid making the mistakes of his predecessors, a vital necessity if we are to go forward. At any rate I wish that I might have had some such outline to study earlier in my academic career when I opened the top door and blithely walked into what at times seems to have been an open elevator shaft. Nevertheless, like Alice's experiences in Wonderland, the entire business, however improbable, is full of strange fascinations.

The functions of a department of medicine may be divided into four general headings for discussion, though they are in fact so intertwined that separation is artificial. These functions are teaching and research, practice and administration. Their order of importance is approximately as listed, though some would put practice last.

The teaching of clinical medicine participates in the hazards of all teaching, which are accentuated within the frustrating, shifting complex of clinical arts, basic science and applied science. It includes the imparting of knowledge (mainly a teaching function), the acquisition of skill and aptitude (mainly a student responsibility), and the cultivation of philosophy which develops in the perceptive as a fruit of relationships in the patient-student-teacher triad. In this region of semi-organized confusion, peace and quiet might gain a foothold if there were firm agreement on the objectives of medical education. There is not, perhaps for the best. Lacking this, we might salvage something to sustain our waning pride if we had any method of measuring our competence as teachers by some crude titration of the results of our efforts. Here, too, perhaps mercifully, there is uniform lack of agreement. Should we judge the physician 10 years after graduation by bank account, ephemeral acclaim of confreres, devotion of a flock of dependent and adoring patients, or by talent for anonymous benefaction in daily toil? Or by what combination of these or other criteria? This rambling preamble indicates that I am presenting very personal views.

Undergraduate Teaching

We* teach undergraduates, residents and staff. Some is formal, but a substantial part, and no doubt the most important part, is informal. Probably the best is the unconscious influence of example. A discussion of the teaching of undergraduates usually hovers like a mother hen over the scattering elements of the curriculum. Beyond accepting its inevitability, there is no consensus. This does not disturb me. If we agree on a few basic ideas, we will be forgiven if we leave the curriculum to those earnest furniture arrangers who believe that its externals greatly matter.

The vital needs for clinical undergraduate teaching are good students, informed and diligent teachers and the hospital-clinic with patients for supervised learning. It has never been demonstrated that any one of the several methods of pedagogy is radically better or worse than the others. In the nature of things a controlled study abstracts the problem from reality and thus precancels its hopeful modicum of utility. I must nonetheless express my admiration for that eager and passionate band of Don Quixotes who have tilted so studiously at the curricular windmill that its circular progress is fairly stopped with all the lances and armor.

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*There are 12 with rank of assistant professor or higher, six instructors and three fellows on our staff. One associate professor, one assistant professor and six instructors on the veterans hospital staff have appointments in the department. There are no part-time attending men.

I am aware that, for any course in the four years of medical school, it would be well if everything else had come previously. We still follow the practice of teaching one thing at a time. Our point of view is the modern didactic heresy, now that the advance guard of teaching is trying the pot-pourri of a little of everything at once with curricular introspection and ambivalance whose uncertainties are illustrated by this verse:

The centipede was happy quite
Until a frog in fun
Said, "Pray which leg comes after which?"
This raised her mind to such a pitch
She lay distracted in a ditch
Considering how to run.

We give some introductory discussions to the first-year students and lectures on cardiovascular dynamics in the course on physiology, and begin regular teaching in the second year with a course in the study of the patient. The methods of physical examination are presented; then drill in the examination of normal persons and finally the special procedures are learned. More than half the time is spent in groups of four, five or six students with a preceptor. Members of the departments of surgery and neurology cooperate in teaching the course. The explicit purpose of the course is to learn: (1) the physician's approach to the patient, (2) the technique of recognizing disease, (3) to interpret the signs in terms of anatomy, physiology, pharmacology, pathology and clinical medicine, and (4) to make such diagnoses as are possible by the exclusive use of physical examination.

In the third trimester we give the course in laboratory diagnosis. Each year the program changes after we review new methods and discard old ones, though the attrition rate is not quite fast enough. Members of the departments of bacteriology, biochemistry, pathology and preventive medicine help give this course a broad and sound base. We emphasize laboratory practice after lecture-demonstration. Problems of laboratory diagnosis are taught as an extension of the physical examination, with stress on office and bedside procedures and integration with biochemistry and pharmacology.

Lectures in medicine in the second and third years are a didactic survey. Assignments for text and journal reading emphasize aspects not taken up in lectures. We make no pretense of full coverage but include examples of various types of disease, new knowledge not yet in textbooks and views we hold which differ from the orthodox. The subject matter is representative rather than comprehensive, in the hope that in this way the student will become fitted to educate himself. On alternate weeks we have a clinic with a patient to illustrate some special condition. At times distinguished visitors lead the discussion. The didactic lectures cover 60 hours, a fivefold reduction since World War II; and the time gained is devoted to the clerkship. The content of the lecture course is reviewed each year so it can be adjusted to the medical school curriculum.

The junior spends one-third of the year as clinical clerk on the medical wards. During the early weeks of the junior year, history taking is discussed with emphasis on practical demonstrations using tape recordings to illustrate good and bad points. The clerkship is the crux of our teaching. In theory we aim at achieving a relationship of one instructor, one student and one patient. The ratio is actually one instructor to four or five students. The clerkship is not uninterrupted assignment since two mornings and one afternoon a week are still occupied by lectures. Even this compromise is a great advance in this school toward having the clerk assigned full-time to one department.

When each new group first comes to the wards the staff man in charge of junior teaching and I go over the important problems of dealing with sick people and the details of patient assignments, case work and presentation. Every week on each of the four wards we have three teaching rounds of two hours each. I take one on each ward.* There is one additional with each of the two staff men in charge of one of the four wards. Ordinarily one or sometimes two patients are considered. For my rounds a patient and the problem illustrated are assigned several days before presentation so the students have time to go to the library and study the subject. Sometimes references are given, sometimes not. All students are held responsible. Any student may be called on to present any patient he has worked up.

We try to hold rounds in the following manner, though we do not have adequate small teaching rooms. The group meets in a room away from the patient and the clerk presents the problem—sometimes only the history, sometimes the salient features of the physical examination also. Then the group goes to the bedside; the preceptor takes his own history, examines the patient, and demonstrates important findings to the clerks. The group then retires to the classroom where general discussion, questions and comments follow. Data from the laboratory may be used. Discussion may keep close to the assigned subject or range widely. Each clerk is interrogated often. Experience has shown that the junior student needs much supervised study before he can be expected to guard the patient's feelings in open discussion at the bedside. We avoid the unhappy spectacle of premortem bedside dissection of the patient, where he is his own unwilling, alarmed and confused witness. After class the preceptor usually dictates a note for the record, agreeing or disagreeing with current formulations. Each staff man has his own gradebook with a picture of each student on a page for written comments which are entered after rounds. Individual staff men vary this program according to their admirable talent for differing, but the general plan prevails.

As soon as a patient is admitted to the ward the student is notified and may begin his study. He is responsible for recording his detailed history, the results of the examination including the normal findings, and the usual studies of blood, urine and feces. Other records and charts are not available until his work-up is complete. His record is checked by a staff man, then corrected or done over. About 40-50 per cent of the patients studied are presented on one of the formal teaching rounds. The student is expected to present any case when the patient goes to a special clinic or conference. He is responsible at all times for knowing the status of the patient, the diagnostic and therapeutic program and the ultimate outcome—death, recovery, transfer, operation or follow-up.

In addition to the scheduled teaching rounds, the junior clerk attends the general clinical conference and the clinical pathologic conference, and the weekly departmental rounds sometimes called grand. The clinical and clinical pathologic conferences which occur on alternate Wednesdays during the school year are teaching exercises in which we participate eagerly. The clinical conference continues throughout the summer. This conference is attended by junior and senior students, interns, residents and members of all departments interested in general rather than specialty teaching. Many representatives from the basic sciences attend. The resident presents a patient illustrating a problem which defies departmental limits. Several people discuss it from different vantage points, with comments and questions from the audience. It is an arena for open discussion and debate where differences of opinion and philosophy are presented freely. The teaching is directed at resident level, though it is illuminating to students of medicine of whatever age. The clinical pathologic conference follows traditional lines except that not all cases are presented as "who-dun-its," and several speakers usually participate. These two exercises, attended by those whose time and interest permit, are the cream of the school's group teaching. They continue to do much to bring the several departments into a greater unity than prevails where a loose confederation of independent departmental empires exists uneasily under a flag of truce. It encourages unity in the school, which for the undergraduate should be the harbinger of unity in the profession in later life.

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*Dr. Willis M. Fowler is now alternating with me, a much appreciated boon.

There are not enough staff members to have a tutorial system but each student has individual attention from at least three staff men who write an opinion of his performance. We may get additional reports from residents and interns. Senior clerks are on the wards at the same time and there is much exchange of ideas with a tendency for the progressive training by a series of apprentice stages which provides valuable didactic give and take under supervision.

We have done much soul searching about examinations and are as far from a consensus as possible. Some of us would gladly dispense with examinations altogether and rate the student according to scrutiny of his daily performance. Others are fascinated with the problem of making suitable examinations. We retain multiple choice, brief case analysis and occasional essay types. Grading is another moot question. I stand for an absolute standard of reference, whereas others are equally convinced that herd performance and grading "on the curve" are good enough. The upshot is that we give examinations, grade them and pay much less attention to the numbers than we do to our collected written opinions and comments. Near the end of the clerkship period we discuss each student in detail and select a few for special observation. Marginal students get oral and written examinations to see whether they advance, make up work or fail. The poor student receives a disproportionately large part of our thought and effort. In spite of all efforts to make our grading internally consistent there is some variation from person to person on the staff.

A scientific study of medical teaching and objective measurements which do indeed measure methods and results are needed more than ever today. The excessive complexity, staggering costs and at present the fantastic difficulty—in fact the impossibility—of even the simplest valid controlled study have been overlooked by those who advocate such naive plans as dividing classes in half. Because a problem is staggering does not excuse us for neglecting it, but to oversimplify and bring the false security of unrecognized error masquerading as truth is fatal to progress.

Of the special topics for teaching, the majority are integral with the whole and scarcely stand out for separate comment. Some exercises are repeated weekly. Dr. Franklin R. Top, of the department of hygiene and preventive medicine, makes communicable disease rounds on the isolation wards with juniors once a week. A weekly conference devotes formal effort to appraising the part emotions may have in producing or aggravating disease, and diseases have in upsetting emotions. We are not particularly happy about calling it a psychosomatic conference, but we do. Once a year a lecture course in electrocardiology is given as an elective which the whole class takes routinely. Senior clerks are invited to the weekly session in this subject run by and for residents. The weekly hematology conference is held to discuss cases with special diagnostic or therapeutic problems.

The growing chest clinic emphasizes the problems of patients with pulmonary or cardiac lesions whose therapy is likely to be surgical, and the objective evaluation of results of operations. In a very active thyroid clinic one or more representatives of the departments of internal medicine, surgery, radiology, the radiation laboratory and often pediatrics have been using the traditional clinical methods of evaluating thyroid function and the newer chemical and radiation techniques. With the extensive follow-up surveys these clinics provide valuable teaching for staff, residents and undergraduates. The unified program eliminates departmental lines and embodies a common ground for service, research and learning as an example of a high order of medical collaboration.

Senior teaching is not radically different from junior teaching, but the student has more responsibility. He does more of the diagnostic and therapeutic procedures. His clerkship on the wards lasts only one month but he has more patients assigned. Each week I have one two-hour ward teaching class with seniors. No assignments are made beforehand. Usually two patients are discussed and examined in the same manner as with junior students. Much of the ward teaching is done while the senior clerks go on daily rounds* with the residents and staff. The senior attends the same clinics and conferences he did as a junior. In addition he has two weeks in the medical outpatient clinic.

The University Hospitals at Iowa City receive patients brought in by ambulance from all over the state. The outpatient clinics serve as a diagnostic screen for hospital admissions and for follow-up. There is little of the care of the chronically ill or those with mild or acute minor medical troubles. We have no medical dispensary in the usual sense. This is a handicap but we remedy it by increasing the concentrated case study of the clerkship. Since our aim is to inculcate an attitude and philosophy about people rather than about lesions this is not a serious deficit. We get real help in the preceptorship. Between the third and fourth year each student spends a month with a doctor in general practice. In connection with the medical clinic, special departmental sections dealing with allergy and diseases of the alimentary canal have important functions in senior clerk teaching. In the outpatient department the student makes the first examination and records it. The study is reviewed by a resident and by a staff man when possible. In the senior year members of the medical department give a few lectures on physical medicine. There is a period of two weeks' clerkship at the nearby state tuberculosis sanatorium. There are no medical lectures for senior students.

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*I use the term "housekeeping" but it has offended some of the staff and residents. This is the high spot of residency training, and perhaps all teaching.

We have discussed and brooded over the newer audiovisual aids. We use a few really fine movies to emphasize points which they are able to put across better than we can with any other method. We are exploring the usefulness of the Cambridge educational cardioscope, which makes available simultaneously a going record of amplitude, frequency and sound of heart sounds and murmurs. We have no facilities for using television in teaching, though several of us have organized and made short teaching programs for telecasting. Perhaps my feeling that the nonmechanized parts of medicine are so important makes me apprehensive of the machine in teaching. I shudder to think of "Medicine 1984," when all the classes are movies, sound tracks or television; patients are never seen in the flesh, and teachers are all but eliminated in favor of canned material. Then the lazy student will have his friend set up his tape recorder in class while he sleeps at home; and at examination, in the apotheosis of feedback, play into the great calculating monster such a selection as will soothe its turbulent electrical pulses, calm its faintly flickering transistors and make it spew forth in composite judgment a fine number as a grade. The whole transaction of medical education and practice, dispensing with the mind and the person, will have reached journey's end in total mechanization.

Residency

Our program of postgraduate hospital training is the fruit of intense study and careful planning. It has occupied much time and thought individually and by the department. One reason is that the residency has been the source of recruiting candidates for a career in teaching and research. Another reason has been our observation that residency training too often has gone by default or has been tailored to suit the pattern suggested by outside agencies.

Our underlying plan is learning by doing in an advancing apprenticeship under supervision which decreases as the resident matures. Since this is intensely personal and variable we have retained flexibility in our system. Most of our residents begin after a year of rotating internship. The first two years are one unit spent in charge of the medical wards and in several related medical specialties. Adjustments and scheduling are varied according to individual and departmental needs. About half of the resident's time is spent in charge of one of the four medical wards and a small fraction of this is spent on the private patient service. During the ward service an intern is assigned along with the resident. His duties and responsibilities are the same. They usually work up alternate cases.

The rest of the two-year period is spent in one of the medical department divisions: communicable diseases, allergy, diabetes or outclinic; and in neurology, chronic lung diseases and psychiatry. At times we have had a resident work in the university's student health service. Ward rotation in the future will include the medical service at the adjacent veterans hospital. When the resident is assigned to another department he becomes in effect a temporary member of that department, involved in its teaching and service functions, and in some cases participating in research. Though this part of the training program is not under departmental control, it goes with enthusiastic cooperation. The residents are aware of its help in giving rounded training in fields germane to internal medicine.

The third year of the residency is divided among four services. One is the equivalent of the chief residency in some programs. It includes supervision of the medical wards, consultation with junior residents, morning report and conference with the department head, liaison with staff men, scheduling departmental rounds, conferences, resident rotation, call lists and such paper work and administration are reduced to a minimum. Another period is spent in charge of the outclinic, where patient's appointments, admissions, checking students, and assisting in endoscopic examinations in the division of gastroenterology constitute the major activities. Each resident may perform between 50 and 100 gastroscopic and about 100 sigmoidoscopic examinations. There is much telephoning and correspondence about patients with referring physicians. Another period is spent as the medical consultant for the entire hospital. Here the responsibility for independent judgment fosters maturity. Discussion with senior staff members is encouraged. Many patients are seen by a staff member with the resident.

The other period is spent in the heart station, where the theoretical principles of electrocardiology are mastered and proficiency in interpretation of electrocardiograms is gained by review of about a thousand tracings under skilled supervision. The resident runs the weekly teaching and review session devoted to correlation of clinical, pathologic and electrocardiographic data. In cooperation with the department of radiology we give intensive training in cardiac fluoroscopy. There is opportunity for observing and participating in the clinical physiological work of the cardio-vascular laboratory, including cardiac catheterization. The resident studies patients intensively with many methods.

The residency is a stratified block system, not a pyramid or truncated pyramid with one survivor at the top. We are not unique in having been much beset in recent years by wars and rumors of wars. It has been our policy to appoint residents without regard to liability for military duty. As a consequence we have lost 13 residents, one killed in line of duty. Four have returned to complete their training and several others are still on active duty. This and other factors have produced morale problems which many of us did not see or were not aware of during our own training. The great majority of residents now are married, many have children and all have financial problems in no wise met by the present "salary." The term resident, meaning one living in a hospital, has become a misnomer.

There is increasing competition for good residents from military, veterans and other federal hospitals. Fortunately hospitals are realizing that they must pay larger salaries to get residents though the pay scale is still unrealistic. Then there is the vacuum of more residencies than there are residents. In the face of all the uncertainties of modern life, many young doctors are putting present security ahead of future excellence. We must recognize the resident's serious economic problems, help him meet them, but not condone an inordinate love of security which not only demands a guarantee of an easy way in life but also expects it to be brought to him. This cannot fail to have a bad effect on the medical profession over the years.

There are activities specifically planned for teaching and training residents. Once a week I hold a meeting to review and discuss the clinical problems, treatment, cause of death and autopsy findings (if available) of all patients who die. Then with the group I see a patient with diagnostic or therapeutic difficulties, an occasion conducive to constant clinical humility. There is also opportunity to consider any problem of interest or concern to the residents. The residents select and present patients for the weekly medical rounds attended by staff, residents, clinical clerks and visitors.

Each resident has several formal conferences and many informal ones with members of the senior staff about progress and plans for a career. There is emphasis on teaching as well as training. Interest in clinical investigation is fostered, and while still residents some have completed and published the results of their independent research. All are encouraged to participate in investigation, perhaps as members of a team, whether they have any interest in an academic career or not. We have a seminar each week during the year, at which the discussion is led or a paper presented by a resident and by a staff physician on alternate weeks. Papers to be given at outside meetings are rehearsed and criticized freely and rewritten.

Since the entire staff is full-time, there is a very close relationship between residents and staff members who are always on hand. Growth and independence are encouraged, but enough supervision is available to see that the maturity is commensurate with the responsibility entrusted to the resident. At all stages the chance to teach colleagues is reflected up and down the line. It serves as a most challenging stimulus to learning and helps develop a sound esprit de corps. We have found that teaching of and by the residents is an increasingly important part of our total effort. A corollary is that the resident is or becomes a good teacher.

The department rather than the hospital pays for liability insurance for its residents, assuming true rather than theoretical responsibility. Funds from the consultation practice support this program. In addition we send residents in their second and third years to a meeting such as that of the Central Society for Clinical Research, the American Society for Clinical Investigation or the American College of Physicians. Any resident giving a paper at a meeting is sent at department expense. These journeys have been useful incentives to learning and research.

The presence of the veterans hospital has been a mixture of real assets and problems. This is not the place for detailed analytic study of the interrelations between our medical school-hospital complex and the VA hospital. The crux of the matter is to what extent the college of medicine should depend on the VA hospital for clinical teaching and what are the responsibilities of a dean's committee school to the VA hospital? A fear has been expressed that a sudden deflection of central policy might leave us high and dry. On the other hand, strong reservations on our part hinder the growth of rapprochement which must exist for true cooperative teaching effort.

The first staff of the Iowa City VA hospital came from our department. Its members now have appointments on the college of medicine faculty. They attend our staff meetings and any clinic or conference they can. They have ward and teaching assignments on our service; and do research with us in both hospitals. In exchange we supply some consultants and attending men. We have juniors as clerks at the VA hospital. For a time we had seniors. We do not know which system is best. The essential problem is manpower. Another fact is that both hospitals, being in a small community, have more patients with chronic than acute diseases. Fortunately, with the VA hospital the number of patients for clinical teaching is more than doubled, and the acute diseases of young men are very well represented.

We have not solved many of the inevitable difficulties and have had our share of growing pains. Nevertheless, our frank discussions and probings contain the hope that our relationship will develop its full potential of mature and mutually supporting cooperation, benefiting both groups and of more importance the patients coming to us for help.

Research

Research is at least as important as teaching. Clinical research, an increasingly complex form of activity, provides the stimulus and opportunity responsible for keeping many people in academic medicine. In our department we have examples of solo research, conjoint effort by a group of equals and the leader of a team of advancing subordinates. Some persons are represented in several kinds of enterprise. Anyone with an idea is encouraged to explore and test it. Departmental funds earned in practice enable us to be liberal in modest pilot trials before we seek substantial backing. Residents and undergraduate students with interest and promise may join a group or try their hand at their own problem.

In medicine, teaching is best where the spirit of inquiry flourishes. Repeating the dogma and dicta of others is stultifying. I believe research is best where teaching also is a major activity. A medical department should foster research along clinical lines as basic and "pure" as that done in biochemistry or physiology; and for the thoughtful every patient is an example of applied research. Just as teaching should not get disproportionate attention, so Research—with a capital R—must not be the tail which wags the academic dog. Unfortunately, some of what passes for research today, issuing from a machine or technique, sprays as a sort of hose, indiscriminately, and with little regard for where, or even whether, there is a fire. And research, good or poor, takes time and increasing amounts of money to buy and run costly machines. In a full academic program time for research is borrowed from time for teaching, or vice versa. We try to plan the assignments of ward supervision and teaching to alternate with "free" periods. Certain obligations and assignments run continually, not the least of which is the private consultation practice and administrative duties, committee work and the like.

Policy regarding research is simple. It is based on complete individual responsibility and independence. This independence is real, and extends to the publication of papers. The sequence of authors' names is decided as fairly as we can. No one hides another's work under his own name with a footnote or postscript to indicate to the careful reader who really did it. Senior members of the staff influence the younger staff men by example and by many conversations, discussions, arguments and a few formal conferences. I have a long list of unanswered questions and problems which I may suggest to a student or resident interested in research, but without any clear idea of which way to go. Though this grab-bag method is not often productive of fruitful results, occasionally it is. It gives valuable experience to a novice in trying to translate ideas into a concrete attack on a specific aspect of a problem.

The department has run a metabolism unit including a ward which is available to anyone in our department, or in other clinical departments, who wants patients kept under constant controlled supervision. Several dozen kinds of problems have been or are being studied by many different investigators. The responsibility for the patient and his comprehending participation in the investigation is the obligation of the individual physician. In conjunction with this unit the nutrition division is very active in basic clinical research. The combined work of internal medicine and nutrition is obvious all the way from painstaking attention to feeding problems of individual patients to research of the most complex kind.

Financial support for research is staggering. Individual fortunes and foundation wealth have declined. Their benefactions, which established and set in motion so much of the pioneering of medical research in this country, provide relatively much less support for research today. Federal funds, voluntary health agencies and private industry have assumed growing importance. This prevented a break in the sharply rising curve of research activity, and has preserved and expanded a corps of able investigators when other sources went by default. This has been and is of value beyond measure. But like most things, it has certain dangers. The ones which trouble me are these: (1) Research by project requires more foresight than most of us have in specifying our blueprints for discovery. (2) Time is wasted in making detailed applications and numerous reports. (3) The demands on the committees which allot grants are unrealistic. Since foreknowledge is impossible, the foresight necessary for progress is impossible. The most one can expect is action judged on past performance. This increases the risk of stereotyped "project research" and delays the discovery of young investigators and the development of new centers of research. (4) The concentration of power and authority in a central bureau may be abused and is inevitably costly and inefficient. Degeneration into a mutual welfare and admiration society must be resisted.

Our medical school and university have not solved the problem of supporting clinical research. In a democracy, whose responsibility is it? Does it belong to the central government? Or the states which individually support the majority of medical schools? Or is it still to depend on the bounty of persons who have accumulated wealth? Or on altruistic foundations? Or will the great industrial empires find it to their advantage to support medical research at large rather than by item? Or is it to continue along its present course?

These are as much the concerns of members of a department of medicine as they are of deans, or statesmen, or the people. For upon their sensible solution rests much of future common weal. Our current attempt to solve the problem of supporting research from the income from consulting practice is in the end self-defeating. For to earn more money to do research takes time and that leaves less for thinking about medical problems and working on them. We have had some support from the university's graduate school. My feeling is that research is a people's responsibility which can be judged best in units no larger than the state. To hope to succeed in getting state appropriations for clinical research will take an effective campaign of education of people in a region where agriculture and its furtherance by research are accepted but where the idea that the same kind of advance is possible for man has never been presented for thoughtful contemplation.*

One of my major activities in relation to departmental research has been to foster the careful presentation of data and the thoughts derived therefrom. I have exercised editorial activities with a benevolent tyranny —never insisting that my ideas be accepted (but for correct spelling and syntax). Going over so many drafts of papers has been tiresome to all concerned. Sometimes it was to everybody's advantage to wait, repeat it, or throw it away. There has been no threat of loss of academic freedom. But it has not been allowed to degenerate into academic license. A gratifying result has been the steady improvement of staff members in ability to deal with and express ideas. I have served several sentences on editorial boards of journals of clinical research and can express the universal wish of editors that this much departmental responsibility were exercised routinely.

Research seminars allow each person in turn to present his problems and reap the benefits of outspoken criticism. New ideas may arise. Arguments, different views or interpretations flourish. Serious errors of technique or logic, badly presented data, slides which try to put a few years' work on one graph—these come to light in the remarkable interplay of ideas in a group of individualists. After such ordeal by fire one of our staff is not likely to be disconcerted or unprepared for questions which are raised at formal meetings where work is presented.

When the results of research are ripe, publication is encouraged. We have had a liberal policy about ordering reprints, because they have been useful in teaching (in some instances we distribute them to undergraduate students), and in sending them to medical department alumni who thus keep up with the department. We massage our single or collective ego by complying with requests for reprints. We publish from 20 to 40 papers a year. Each year's offerings are bound in a volume for the conference room and a few for distribution to libraries. We write a detailed annual report of departmental activity and accomplishment. This has been useful in giving us the realization of progress which the day to day routines hide. This report goes to all members of the staff and residents in our department, other department heads in the school, the dean's and the president's offices. Some have been sent to colleagues in other schools who have been interested in our methods and activities.

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*A medical school in an agrarian society has to oppose the so long prevailing theme of "millions for manure but not one cent for literature." The cynic has too well said that hereabouts ragweed would have been eradicated long ago if hogs had hay fever.

Practice

No two departments of medicine handle the vexing problem of private practice exactly the same, and the method at Iowa perhaps is unique. This is not the place to give a detailed discussion of its mechanics. Some of the circumstances peculiar to the region and an attempt at their solution I will look at philosophically. I am free to do this since I had no part in originating or setting in motion what has been called the Iowa plan.

Iowa City has a population of about 20,000 without students. It is in eastern Iowa, a state mainly agrarian, with about half of its income from industry but much of that derived from or contributing to farming. There are no large cities but many thriving small cities and many towns. The population of the state has been about constant over the last 20 years. Prior to the introduction of the current practice scheme, most department heads had an extensive practice, the proceeds of which they kept. Generally no other department member had the privilege of practice, or if he did the fees went into a small departmental fund. Human nature being what it is, the chief spent much time in practice and the rest of the staff had the brunt of teaching, research and sometimes administrative chores. A system more conducive to uneasy relationships between and among departmental staffs could hardly be devised in a school where the faculty has been full-time for many years and in a university where generous salaries are not the rule. The necessary result was that younger staff people left and recruitment was increasingly hard.

In order to obviate such an unhealthy state and to gain other ends the present plan was developed. It provides that every one in clinical departments with rank of assistant professor or above shares in the earnings in each department to an extent determined as a fixed percentage of his university salary. Thus, full professors may supplement their salary 100 per cent, associate professors 75 per cent and assistant professors 50 per cent. A 5 per cent increase yearly is permissive after two years of meritorious service as assistant professor but not to exceed 75 per cent. A similar increase after four years as an associate professor may not exceed 100 per cent. One drawback of the plan, the failure to include instructors, is now being considered for change. If a department's earnings are not adequate for the full supplement they are prorated in that department. The support of secretaries and technicians who help in the practice are paid from earnings. Members of different departments get approximately the same salary for equivalent academic rank.

From the fees we pay for liability insurance for staff and residents, scientific society dues and some special department teaching or research activities. The surplus at the end of the year is retained in a departmental trust fund which is used for research, teaching, trips to meetings, refresher courses, special visits to other medical centers, journal subscriptions, books, special apparatus, extra secretarial work, research pilot runs and technicians' salaries. At the end of the year the residue, which in this department has been as high at $13,000, goes to the central scientific fund which is administered by a medical school committee for the good of the entire college of medicine. Much of it is used in the basic sciences.

The medical department has only fourteen beds for private patients, so the service is generally for diagnosis rather than therapy. The bulk of the practice is office consultation. We see about 400 patients a month with all but a tiny fraction referred by physicians. About 40 per cent of the private patients come from outside the state. Our meager office facilities were not designed for office practice, and the suddenly imposed 40-hour week for nonprofessional and laboratory employees almost ruined the chance to practice good medicine conveniently.

One of the most frustrating aspects of our consultation practice is the archaic mechanics of the milieu in which we work. No magic carpet carries the patient to the scene of tests and procedures, and the perplexity of a fractious elevator is not without its terrors, especially since it is sometimes the patient's first experience. No band of fleet couriers corrals the data for our leisurely contemplation. In fact, if tremendous thought and effort had been expended to design a craft with more built-in headwinds, it is not probable that the result would surpass our present structure. Of course the physical plant was not designed for small group teaching, clinical clerks in increasing numbers, or the present day enhancement of medicine by so many laboratory studies. Perhaps the one saving grace of our methods lies in the fact that the patient has one physician who takes his own history, does his own examination and is interested in the patient's troubles. In some instances our only additional accomplishment is explaining what was found in some other review.

A real burden on the staff has been the responsibility for medical care of faculty members and their families, colleagues, students, nurses, the hospital's technical and administrative people, though we are not in a position to render the care owed the patient by a personal physician in practice. Were it not for the compactness of the department's space in the hospital, a small compensation for inadequate room, the basal requirements of coming and going to our many tasks would crush us. With minor exceptions the wards, teaching and research laboratories, classrooms and private beds are on a single floor in the hospital.

Not the least value of the private consultation practice is the experience we all have of being personally responsible for the care of individual patients. This provides a fruitful source of useful material for discussion in teaching. Private patients are used in clinic, seminar and conference teaching, but we do not assign them to clerks. This is because of logistics, not principle.

A factor which is important in our consultation practice is the seasonal peaks of farm activity, which are dips in our consultation practice, since elective visits defer to the demands of planting, harvesting or the great obstetrical crises of animal husbandry. Times of heavy teaching load coincide with most active consultation demand.

How Things Run

Departments may be run by an autocratic boss surrounded by yes men, who may not be aware that he is domineering, or may be run along democratic lines which sometimes are so tenuous that drift may be a better verb than run. The continental and British systems have tended to operate with one all-powerful chief, rigidly fixed in unquestioned authority at the top of the heap. His caste is elite, his hegemony secure.

He basks in the eulogies of his minions. Such has been the custom in American medical schools, but it is declining. It has occurred more often in fields of specialization developed around techniques such as general and special surgical subgroups than in broader disciplines such as medicine or pediatrics. Perhaps this is an inevitable by-product of the vast complexity of general medicine, which perceptive physicians realize will forever elude complete mastery. However that may be, there is an increasing trend for departments to be led and guided rather than be run.

A department of medicine may be thought of as a social organism, more complex than the family but not so complex as a medical school or hospital. It shares characteristics of the defensive herd rather than the aggressive pack in Wilfred Trotter's meaning for the terms. Any biological unit is composed of members or organs which subserve special functions and can thrive only because an integration and a mutually communicated cohesion permit sub-units to specialize while integral with the entire organism. Each contributes to the whole and the whole makes each possible. In a department run along autocratic lines the head might be considered as the nodal point of a primitive nervous system, the members being the nimble fingers to do his bidding. Autonomous function is impossible, and separate growth is not tolerated beyond conditioning of reflexes useful mainly to the head or chief. This makes for a neat, precise and powerful but rigid system. The democratic department is not so nice. It has rough edges and cannot snap its heels prettily for parade. If it were not for all the confusion now swirling like a blizzard of uncontrolled facts about the concepts of hormones and *stress,* I would liken the head of a democratic department to some crude endocrine gland, not so impressive or elegant as the pituitary but with a similar influence—subtle, slow, not precise or exact, often merely permissive, influencing cells near and far but letting them grow and develop their own talents and traits. Some develop to the extent of budding off as new leaders and moving on or taking over.

But back to our own departmental organism which obviously, I think, runs along democratic lines. The age-old worry of special or general focus we attempt to solve in compromise. By the nature of our group each has to combine a wide general knowledge of medicine with expert proficiency in one or more special fields. Staff members in rotation have charge of the ward services, two men sharing responsibility for a ward at any time. There are no separate wards reserved for special diseases or pieces of the body, so each physician on the staff may encounter almost any kind of person or problem. Their care he must be able to supervise and their problems he must use as the matrix of his ward teaching of undergraduate, resident and junior staff. Ready consultation is available from anyone with special skill in a particular problem. Thus by necessity as well as by policy we must be physicians first and then specialists. Without a broad base of general medicine too many of today's practicing specialists, staying close by their kind of tree, never see the woods at all. However excellent specialization has been for the advance of technical knowledge, it is ruinous in practice unless planted on the firm foundation of general medical learning.

Because of the swarming tangles of the jungles of medical knowledge, special skills are needed in a complete department. The plethora of medical facts has outdistanced the mental capacity of the most receptive and hard working physician just as the corpus of medical knowledge has outrun the ability of a single man to compass it in a textbook. That this is unfortunate makes it not less true. In our department most but not all of the accepted subdivisions of general medicine are staked out by one or more of us. In some parts we are stronger than others, both in capacity and numbers. This comes from the attraction which a person or group engaged in active thought and investigation holds for the younger physician as he develops. Part is fad, or personality, or the freedom of the individual to move in a direction of his own choosing. The concentration of interest influences practice, research and teaching, especially assignment of lectures.

The intercommunications in a system with analogies to an endocrine complex must provide means for the units to reflect back on the central gland, and on each of the other units. There are many ways in which this can be encouraged. Upon my arrival here as chief of service and department head my first move was to establish a staff meeting held every week. At first I read notices and letters and reported on meetings of medical school council and clinical department heads. This was met with circumspect but unanimous silence. Before long there was eager discussion of the most diverse topics, pertinent and impertinent. Once a month the meeting is attended by our nursing supervisors and the senior residents. This gives to them a sense of belonging, even though they rarely use it as a forum for sounding off.

Those of us who have watched the staff meeting for six years have recognized its crucial role in knitting very diverse elements into a unit. It is the way we teach each other. As with any democratic process it works slowly, takes infinitely longer to reach decisions than does an act of arbitrary efficiency. Patience is often taxed by the quaint perverseness of the individual as he behaves in a group. Sometimes we yield to the intoxicating pleasure of the sound of our own voices without the wise excisions of thoughtful restraint. But even this serves as useful catharsis. We learn toleration. The give and take teach us that the harumphs and clucks may come from uneasiness rather than obtuseness.

The democratic system, with all of its risk of frittering diffuseness, provides opportunity for giving direction and tone. The open discussion, criticism, argument and debate in the staff meeting help glue together in compact aim and purpose very diverse and differing people whose sense of belonging to a group builds a solid and warming morale. Independence is not stifled but encouraged. The unit is integrated without requiring threat of outside pressure or attack to force it together. We are proud of each other's progress and achievements and depressed by shortcomings. This mutual regard and relaxed atmosphere is the first thing noticed by an outsider. It has not bothered me that a visitor at our staff meeting was not certain who was the department head. Who knows?

Sharing our problems, we also share responsibility. Decisions usually are reached by consensus. Rarely do we actually vote. Only in exceptional circumstances is a veto used. Some administrative functions are given to individuals, others to "committees" of two or three. Thus, direction of senior teaching is handled by one and junior teaching by another; correspondence about residencies, preparing schedules for ward teaching rounds, lectures and staff assignments, journal subscriptions, representing the department in special clinics—each has a person assigned. Those with skill at organization have most of it to do, and the mechanical work is divided as evenly as is feasible.

My taste for routine administration is nil but there is an irreducible residue which must remain. This includes major problems with other departments, hospital administration, nursing and the medical college. The other administrative function is nothing less than being readily available to anyone for question, comment, advice or suggestion; and there is no substitute for it. It is exorbitant of time and destructive of leisure, but it is the key to a democratic system.

In spite of regular staff meetings and personal interview there are other channels of communication. A departmental routing sheet is used for exchanging ideas and sending out information. Memoranda are circulated. Bulletin boards, though solidly covered, are not very valuable. There is frequent exchange of information; particular journal articles are marked and sent around to those with special interests.

A very important physical unit of the department is the conference room and library. By ingenious design it can be divided into two small rooms or made a single room where 50 can be seated comfortably.* Sturdy folding tables, chairs, projection equipment, light controls, sliding blackboard and x-ray viewing boxes have been combined for utility and flexibility. The walls have stacks for 60 current medical journals, and bound volumes of the dozen most used journals for the last 10 to 15 years are at hand. This quick access to books and journals makes reference easy and encourages the residents and staff to read. Several hundred reference books, texts and volumes on history, ethics and medical philosophy complete the library. Photographs of the previous department directors adorn the wall at one end of the room. A special shelf of historical books is a memorial to a former department head, Campbell Howard; and a shelf of books on medical ethics and philosophy is a memorial to Mayo Soley, a former member of the department and dean. Several of us have good working libraries or historical collections in particular fields, and these, along with a number of personal reprint collections, are used widely. New books are added through purchase or donation, and old journals are given to the medical library as duplicates or for exchange.

Miscellaneous

In order not to exceed reasonable limits of space, many things must be left out. Others—notably research facilities, programs and accomplishments—are barely touched. Members of our staff are in charge of physical medicine, nutrition, the blood bank and the sterile fluid service. We supervise the general practice residency. Our postgraduate teaching emphasizes the utility of our regular rounds, clinics and conferences to which all physicians are invited and some attend. We have organized short courses for doctors of the state, but the poor attendance halted this activity. We have had a number of physicians from other countries on the staff or as voluntary assistants or residents, a mutually beneficial experience. We have assisted in teaching nurses in a nursing school where there is complete separation of the service and academic functions, a dichotomy which medicine fortunately escaped after the Renaissance when the barber-surgeon kept alive the spark of clinical arts in his close contact with the patient. Our archaic physical arrangement of office space adds to the already vast and increasing burdens of an overworked secretarial staff. One of the real problems has been the huge volume of secretarial and paper work demanded by an active and productive department. Successful departmental function only increases the load.

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*This accomplishment is uniquely the result of Dr. E. L. DeGowin's thought and work.

I shall not consider the multiplex external relationships of the medical department to other clinical departments and to the basic science groups. An example is our participation in teaching physiology and many common research efforts. The central role of general medicine and surgery in medical teaching, practice and research is recognized, though not always without uneasiness in a school whose specialties have long had a superb record. Our relations with the dean enjoy on a large scale the democratic system operating in the department. As individuals our active participation in university life is made easy because the community is small. The broadening influence of association with many actively thinking people in remote and near fields of interest is stimulating. It exemplifies on a small scale the wide ramifications of the social responsibilities of physicians and their impact on society. Today a cardinal need is that people generally have a better understanding than they do of medical education, practice and research. If this does not come from the teachers, it will not come at all.

No region of interrelation is more beset with the hazard of misunderstanding and frustration than that of hospital administration and clinical departments. Caught between the incessant demands for equipment, apparatus and technical service on one side, and increasing costs, rising wages, constricting work week and competition for manpower, the hospital administrator's life is not easy. His problem is compounded in a hospital where requirements for teaching may conflict with economical efficiency. Unless the hospital administrators have an understanding of the primary attributes of medicine as a profession, their eagerness to run a hospital as an effective business enterprise creates and sustains friction with the clinical departments.

It might be supposed that all the activities discussed so far would satisfy the most stringent definition of *full-time*. But this is not so. Progress in academic medicine is rarely separated from increasingly important and time-devouring responsibilities in local, regional, state, national and international societies of special and general scope. Administrative duties, the dubious rewards of capacity and success, arrive at a time when the demands of academic life are in full tide. One gets elected and appointed to offices and committes. Voluntary health groups need help and advice. Meetings, speeches, panels and discussions invade the schedule and destroy the last faint hope of leisure. Some of us are victims of our interest in writing and spend untold hours in reviewing and editing manuscripts, an occupation which gets more depressing as the vast and growing swarms of barely literate medical writers grind out paper after paper.

Senior staff members have an obligation to help their junior colleagues gain recognition and reputation for their achievements, and this in its many ramifications takes time and thought and thoughtfulness. And to all these things I might add more, but the story has gone far enough already.

Conclusions

In the foregoing pages I have examined and discussed how our department of internal medicine works, its aims and its functions. A contemporary department is not a hydra-headed monster, each of whose necks is a Gordian knot, but still its complexity is ample. Internal medicine in its academic aspects, a remarkable combination of clinical arts, applied science and basic science, appeals for many reasons and attracts people radically different. A department functions well when the divergence of individuality is tempered by common purpose and shared experience. Strong centripetal forces must balance the splintering effect of diversification. Exchange of information is the key to good morale. I have likened our system to a primitive endocrine complex, with the department head influencing rather than commanding, permitting development and changes of the units and developing himself as the departmental organism grows. In a completely self-contained unit such as ours everyone must have or get broad competence as a physician. Special interests and skills are added. We do not segregate patients, lesions or talent. But we must guard against diffuseness and encourage the growth of special interest and investigations.

Our university has not solved the problem of paying for research and teaching. In our present situation the time spent in practice earns money for salaries, and some to do research. But practice erodes the time so that less is left for research. In such a crowded program, research is done by those who have the impelling desire to do it, at what price they know well. The illusion of leisure vanished long ago. Contemplation and meditation we cherish because of its high cost. Our teaching is directed by individual attention to students in small groups. Rather than try to synthesize, correlate and integrate the material of medicine for our students, we try to inculcate attitudes, train aptitudes and foster skill, so that the student learns to learn. We hope our modest successes make up for our obvious failures, and we selfconsciously strive to improve our capacity and our results.

Anyone who is willing to endure the turmoil and the pangs of trying to guide a medical department requires an array of talent, strength and wisdom far beyond the possible. Deficiencies can be corrected only up to a point by hard work. Perhaps the requirements are ruinous. Certainly they are unrealistic.

Among the neglected duties of a department head is the digesting and collating of his experience so that others may profit by his errors, learn by his troubles, follow the good and avoid the bad. Much of this neglect no doubt stems from the supposition that the ground rules are axiomatic. This was my assumption when I left the loyal opposition and took the helm. But learning things by trial and error can be helped by the judicious study of the experience of others so long as it is not used as a cook-book or answer-book. I hope that this discussion of our practices, ideas and ideals will be useful to my student companions in academic medicine, now and in the future.

A report from the National Board
of Medical Examiners on the

Validity and Reliability of the New Objective Tests

JOHN T. COWLES and JOHN P. HUBBARD

A LONG-RANGE program to improve their written examinations has been undertaken by the National Board of Medical Examiners with the cooperation of the Educational Testing Service. The work has been supported by the John and Mary R. Markle Foundation. Sufficient progress has now been made to provide evidence of the validity and reliability of these examinations.

New objective, multiple-choice tests in two subjects, pharmacology and medicine, were developed over a one-year period and introduced into the testing program in 1951; three additional tests were similarly developed for use in 1952 in pathology, pediatrics and public health and preventive medicine. Six other new tests were developed for use in 1953 in anatomy, bacteriology, biochemistry, physiology, obstetrics and gynecology and surgery. As each objective test was introduced, it replaced the essay type test in that subject.

Although the new, machine-scorable, multiple-choice tests represent immediate and marked increase in objectivity, rapidity and fairness of grading for these national board written examinations, it is not a manifest corollary that the tests represent improved measures of proficiency in these subjects. An important part of this test development project, then, has been a series of planned studies to evaluate the adequacy of the tests.

It should first be pointed out that the best guarantee of validity of any achievement test depends upon those who actually write and edit the test questions. The new national board examinations are prepared with the utmost care, and a separate committee is appointed for each subject by the national board. Members of these test committees are medical school department heads and teachers with recognized prominence in their own fields, selected on the basis of wide geographic distribution. All tests are outlined and the items are written by these committees. Technical guidance in the design of questions, and subsequent editorial services, are provided by the test development staff of the Educational Testing Service. The work of each committee member is critically reviewed by each other member of that committee to insure that the questions are well constructed, appropriate, free from ambiguity and representative of important aspects of the subject and of high standards of medical education. Special effort has been made to devise penetrating questions requiring the exercise of reasoning and judgment rather than mere rote memory or recognition of facts. For each test,

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the test construction process requires almost one full year.

To the extent, then, that each test conforms to accepted teaching objectives of medical educators and also utilizes the best available techniques of measurement of those objectives, the first prerequisites to test validity have been met. But, although a test is based upon the best judgment and skill of educators and test technicians, it nonetheless needs confirmation of its validity by the correlation of its scores with an appropriate, independent criterion.

Statistical Study

An initial statistical study, undertaken in 1951, was the direct comparison of essay and objective methods in two tests: pharmacology and medicine. Each test was part essay and part objective and was administered to national board candidates at the same test administration and under closely parallel conditions. The results of this earlier study have been reported in this Journal.[*] In general, the objective tests consistently correlated higher than did the essay tests with independent estimates of student proficiency by their instructors. The objective tests also demonstrated a reliability of measurement which is more adequate for precise grading, and a distribution of scores which provides better differentiation among candidates than is characteristic of essay tests graded in the usual manner. Moreover, the objective tests and their individual questions lent themselves to more exact statistical appraisal than did the essay test questions, thereby permitting subsequent improvements in the objective type tests.

Each objective test was thoroughly analyzed in regard to various characteristics such as test reliability, item discrimination, item difficulty, score distribution and intercorrelations of tests or parts of tests. On the basis of these analyses, the first objective tests were given a major revision by the committee before the next forms of those tests were administered. Such revision and improvement are now routine with all objective tests of the national board.

A second set of studies, not previously published, is based upon the first full-length multiple-choice tests of Part I and II of the national board examinations. These were introduced in April and June 1952, and consisted of tests of two and one-half to three hours each in five subjects, including those two subjects for which earlier forms were used in combination with essay tests the previous year. As for the previous study, those medical schools which use the national board examinations for all students were asked to provide, prior to the examinations, ratings of the proficiency of students in the subjects of the tests. The ratings were a simple listing of students designating the top fifth, middle three-fifths and lowest fifth of the class in each subject. Again, correlations of test scores and these school ratings were computed as a measure of the validity of each test for assessing student proficiency. Ratings were provided by 14 schools in Part I subjects and by 10 schools in Part II subjects.

A third set of validity studies have now been completed involving the remaining six subjects of the national board examinations. Objective tests in these subjects were developed in the same manner as the earlier tests. Twelve schools furnished ratings in these four Part I subjects, and 12

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[*] See Cowles, J. T. and Hubbard, J. P.: "A comparative study of essay and objective examinations for medical students." Journ. Med. Edu., Vol. 27, May 1952, Part 2.

TABLE I

Validity and Reliability Coefficients for National Board of Medical Examiners Tests, 1952-53

Test	N	Scaled Score Mean	Std. Dev.	Validity rc	Reliability rtt***
		Part I			
Anatomy**	897	81.24	5.79	.47	.94
Physiology**	946	80.42	6.17	.46	.87
Biochemistry**	893	81.29	5.69	.58	.92
Pathology*	1162	79.48	6.37	.41	.88
Bacteriology**	907	80.59	6.39	.48	.87
Pharmacology*	1162	79.69	6.33	.48	.88
		Part II			
Medicine*	733	81.44	4.83	.38	.92
Surgery**	925	81.88	5.01	.27	.84
Obstetrics & Gynecology**	933	82.09	5.07	.33	.81
Public Health*	733	81.96	5.10	.24	.77
Pediatrics*	733	82.04	4.95	.28	.80

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* 1952 validity data. Correlations were also obtained from 1951 data for pharmacology (N = 546, rc = .49) and medicine (N = 636, rc = .37). All validity coefficients are based on pooled total group.

** 1953 validity data. Each coefficient represents a weighted z-average of the validity coefficients computed for each school separately.

*** 1953 reliability data for each subject, based on different samples of 370 examinees each.

schools furnished ratings in the two Part II subjects. Correlations of test scores and school ratings were computed.

Table 1 presents a summary of the results of these evaluations of all 11 new tests. For the 1952 tests, data from all schools participating in the validation study of each part were pooled before correlations were computed; for the 1953 tests, the validity data were treated separately by school and the test-rating correlations were then averaged by weighted z-transformations. Reliability coefficients, by Kuder-Richardson formula, are also presented in the last column of Table 1.

The validity coefficients are all very satisfactory for tests of this nature at this level of professional education, providing, of course, the choice of criterion measure is accepted. All coefficients differ from a zero correlation at a high level of significance for samples of the size shown. It may be argued that the tests measure functions not evaluated in instructors' ratings and vice versa; hence the ratings may not be parallel measures of the same learnings. If so, the ratings could not be expected to correlate highly with the tests. Even if similar functions are measured in tests and ratings, there is the real possibility that a test samples certain functions not covered by the particular instructor. However, the very length (or rather, breadth) of the objective examination is an assurance that varying curricula will not be inequitably covered, since no student is expected to know the answer to every question. This flexibility is an important asset, since it assures that the test need not prescribe the content of any course of instruction.

Another consideration in validating

a test against school grades is the problem of obtaining statistically reliable ratings by instructors when complex performance is being evaluated without detailed definition of which aspects are to be rated or when the ratings are based on evaluation by different instructors of different aspects of performance. Unless pooled ratings are on the same aspects and on a similar scale they may be quite unreliable (inconsistent), and this will limit the correlation of tests with such a criterion.

Various hypotheses may be suggested for the evidently lower validities for Part II examinations as compared with Part I examinations. This difference may be due to increased complexity of the Part II subjects, and increased variability of the methods of grading students, with consequently lower reliability of instructor ratings. Furthermore, the upper class students may demonstrate greater homogeneity of performance as a result of training and the dropping out of some students during the successive years. Differentiation by their instructors is thereby more difficult.

In reviewing the reliability coefficients, it must be borne in mind that these coefficients reflect the internal consistency of items in each test, rather than estimated test-retest correlation. Each estimate is doubtless attenuated by any significant heterogeneity in subject-matter of the test, and this should be taken into account in comparisons of different tests. These coefficients all appear quite satisfactory. The standard errors of

TABLE 2

Validity Coefficients for Each of Six Tests, Separately by Schools, National Board of Medical Examiners, 1953 Test

Medical School	Anatomy		Bacteriology		Biochemistry		Physiology		Surgery		Obstetrics and Gynecology	
	N	rc	N	rc	N	rc	N	rc	N	rc	N	rc
A	**	**	50	.17x	**	**	**	**	47	.52	47	.13x
B	***	***	***	***	***	***	***	***	78	.48	78	.20x
C	68	.52	69	.56	69	.41	69	.45	70	.07x	70	.15x
D	69	.49	71	.49	70	.62	70	*	60	.06x	60	.23x
E	23	.36x	21	*	13	*	9	*	67	.20x	67	.32
F	105	.36	109	.55	106	.52	107	.48	***	***	***	***
G	63	.49	71	.30	72	.64	71	*	91	.26	70	.52
H	87	.40	94	.55	94	.59	92	.52	73	.34	82	.26x
I	117	.63	***	***	116	*	117	.40	138	.18x	138	.37
J	***	***	***	***	***	***	***	***	120	.25	120	.53
K	131	.50	127	.38	115	*	127	.32	23	.00x	23	.18x
L	68	.45	68	.48	68	.58	68	.46	60	.26	60	.40
M	118	.45	121	.60	118	.65	120	.54	***	***	***	***
N	48	.47	106	.44	52	*	96	.52	98	.46	98	.18
Total N/Avg.rc	897	.47	907	.48	893	.58	946	.46	925	.27	933	.33

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* A single asterisk in the table indicates that a large number of candidates for whom there were ratings did not take the test and that among the candidates who took the test there were disproportionate numbers rated in the highest 20 per cent and the lowest 20 per cent of their class. Consequently, no validity coefficient is reported.

** At school A, the candidates who took the anatomy, biochemistry and physiology tests were not the candidates for whom ratings were available. Consequently, no validity coefficient could be obtained.

*** A triple asterisk indicates that no ratings were provided by the school for the indicated subject. Therefore, no validity coefficient could be obtained.

x Coefficient not significantly different from zero.

TABLE 3

Intercorrelations of Test Scores for Part III National Board of Medical Examiners Tests, April 1953

N = 370*

Subject	Medicine	Obstetrics & Gynecology	Pediatrics	Publ. Health & Prev. Med.	Surgery
Medicine	—	.57	.65	.58	.75
Obstetrics & Gynecology	.57	—	.58	.55	.67
Pediatrics	.65	.58	—	.62	.60
Public Health & Prev. Med.	.58	.55	.62	—	.56
Surgery	.75	.67	.60	.56	—

* Spaced sample from total group tested

Table 3 is presented to indicate the inter-relationships among test scores for candidates who took all of the Part II tests in April 1953. Similar correlations were not computed for a like sample from the June 1953 Part I group, since not all Part I candidates take all tests at a single test administration. It is expected that a larger and more representative sample for Part I will be available when June and September 1953 data are combined.

measurement, in terms of reported-score units, range from 1.3 to 2.4 points for the 11 tests, most of them being in the vicinity of 2.2 points.

Table 2 presents the correlations of test scores and school ratings for each subject, separately by schools. The Part I coefficients are very satisfactory; all but two differ significantly from a chance range for uncorrelated measures in samples of this size. The Part II coefficients, however, vary more widely, and several are within the chance range for samples of this size. Here again we note the general difference between the Part I and Part II validity coefficients. We also see the possible effect of local differences in school ratings, or the possible differences in curriculum and instructional emphases, which have attenuated the relations between test scores and ratings at particular schools. It is impossible to account for these fluctuations from school to school without recourse to information which was not available in this study.

Table 3 presents intercorrelations of test scores for a sample of Part II examinees.

Summary

1. During the past three years objective, multiple-choice examinations have been newly developed as a cooperative enterprise by the National Board of Medical Examiners and the Educational Testing Service.

2. The objective of this test development program, carried out with Markle Foundation support, has been to improve the written examinations, not only in regard to the reliability and fairness of grading, but more importantly in the validity of these tests as measures of student proficiency.

3. The validity of the new tests has proved to be very satisfactory. This has been amply demonstrated by (a) the direct participation of outstanding medical educators and test technicians in the construction of the tests, and (b) the significant correlations of test scores with independent ratings of student proficiency.

4. The reliability of the new tests is quite high for tests of this kind, thereby assuring precision and stability of the score scale. This reliability of measurement is largely due to the use of a large number of questions on each test in which the selection of each question has been guided by detailed statistical analyses; in addition, the tests are accorded standard techniques of machine grading and score scaling.

The Financing of Medical Schools

A Proposal

BRIAN BIRD

DEFICIT FINANCING of medical schools has been an established fact for many years. Not only is deficit financing an established fact, it seems also to be an accepted fact. How such a condition was established and accepted are questions which should have answers. Too often these things creep so slowly into existence, come so unspectacularly to full growth and gain so firm a place in our thinking, that we have no occasion to question their origin or their necessity. The facts in the matter are clear and undisputed. Tuition charged to medical students for many years now has not paid their educational bill, and increasingly year by year tuition pays a smaller part of that bill. The deficit—the difference between tuition paid and actual cost—has, so far at least, always been met: it has been met in state medical schools through government subsidy and in private schools through gifts, endowments, and to an increasing extent, through government grants. In view of the fact that the bills always have been met, perhaps there is nothing to be concerned about and no other solution to financing need be sought.

There is of course the possibility that costs will continue to rise, or—what seems more likely—that private sources of funds will decrease until finally a point is reached where none but state schools will be able to pay their bills. Then naturally the country will have left only state schools able to educate doctors. Many arguments can be brought, and have been brought, regarding the effect of such an eventuality, and there are those who sincerely believe that no tragedy would result if all schools came under state control. On the other hand, there are those who feel strongly and for many good reasons that private medical schools should continue their existence free from such control.

In attempting to make possible a continuation of private medical education, emphasis has always been placed upon attempts to increase gifts and endowments; i.e., to bring more outside money in to help defray expenses. Appeals for money are made to all sorts of groups—to alumni, wealthy individuals, fund-raising organizations in behalf of particular research programs, corporations, charitable foundations and, reluctantly, to federal, state and municipal governments.

Appeals are made not only to many different groups, but are of themselves of many different kinds. Alumni give because of their loyalty

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to the school and because of their generosity. Additionally, and perhaps most importantly, alumni give because of their gratitude and their guilt at having received, when they were students, something for nothing. Guilt, however, is not always the wonderful stimulus for giving that it seems to be. On the contrary, guilt very often prevents giving or limits it severely.

Wealthy people often contribute because they can endow a chair and through it perpetuate their name, or they can create a memorial to a relative, or they can escape income taxes, or they can salve their guilt. Or—and one should not forget it—wealthy people often give simply because they enjoy giving.

A different and powerful appeal presents itself to those who oppose government control. These people believe that the private practice of medicine is the keystone of free enterprise and that if medicine falls, an avalanche will follow.

Still another appeal, popular and effective, is based upon the warm belief of laymen in the practice of medicine as a charitable, humane, self-denying calling. It is enough, they commonly believe, that the medical student dedicate himself to service to his fellow men; he should not, in addition, be asked to foot the staggering educational bill.

It is not implied, and should not be inferred, that medical schools make these appeals or others in cold-blooded words. They do not. But the meaning is inherent in all such requests for financial help. Even this does not imply that such approaches are necessarily or always improper or incorrect. For one thing, these appeals apparently work and money is brought in. For another, they serve an estimable purpose in that they bring many people together with medicine, and bring medical schools into community spheres of interest. And of course such appeals and the money they bring in are essential in supporting research in all areas.

However, the goodness in these methods should not alone determine whether they should continue. In all of them there is a passive assumption that the community should support medical education.

Whether this assumption is true is a matter for serious consideration. Is it absolutely essential to get outside support? Is it even wise to seek outside support? Is it a tried and true fact that tuition cannot pay the whole amount of medical school costs? Is it not possible that medical education would gain immeasurably if costs were met internally?

Let us examine these possibilities and let us ask first about tuition. If one looks only at the poverty of medical students, the answer is clear: tuition cannot be increased sufficiently to meet costs. Most students simply don't have it, and to make medical education available only to rich men's sons is unthinkable. But why should one, even for a moment, look upon the poverty of students? Should one not look instead upon the finished product? Should one not look upon the financial ability of the people who have undertaken this expensive training?

Why Not Doctors?

Doctors, the finished product, are not poverty-stricken. They are, rather, among the higher income groups, the good earners in any community. Looking at their financial standing, it is ridiculous to consider that they should receive public support. Yet they all have received such support. Every doctor has had something for nothing, and a good lot of that something too. Speaking in terms of money—and that should be no disgrace—the doctor has received free, without any incumbrance, many thousands of dollars, which in turn enables him to earn, honestly, respectably and rightfully many thousands of dollars a year for life.

This does not mean that doctors make too much. They do not. If anything, they should earn more—not less. A high level of medical practice is an extremely skilled and responsible occupation and should bring a very high financial return.

But the point in question is not that doctors make a lot of money. What is in question, what is paradoxical, is this: isn't it odd that they should not themselves pay in full for the education which makes it possible for them to earn so much?

In view of the fact that the practice of medicine is not altogether a charitable, self-denying calling—that, as well, it is a money-making occupation—it is difficult to understand an appeal to the public or to the state for the education of people who, as a result of that education, will be provided for so comfortably. Not only is it difficult to understand, it seems wrong. Doctors are well able to pay in full for their own education and without doubt should do so.

This, of course, is heresy—or at least so it will seem to many. To broach openly the fact that doctors profit from illness, to suggest openly that doctors should pay for their own education in a businesslike way, to do anything of this kind will be interpreted as an unwarranted attack upon the role of the doctor as a Good Samaritan. Such a reaction is to be expected. It is only hoped that such feelings will not completely cloud the issue. The doctor's role as a healer, a helper, a man of goodwill, must be preserved and can be preserved without cloaking him in a disguise.

A Legal Debt

In addition to this objection—the emotional one—there are many others standing in the way of making medical education self-supporting. First among these difficulties is the fact that the doctor has his money only after his education, or the expensive part of it, is over; as a student he has nothing. But as a student he is a potential earner, and this should be realistically regarded. Why would it be so difficult to have the student borrow the funds from the school and pay them back? Is this not something for some medical school brave enough, forward-looking enough, to experiment with? What would happen if the school were to say to every beginning student, "You will, year by year, incur an indebtedness to us of $2,000 (or whatever), which must be paid off within 10 years (or 15 years) of graduation. It is a legal debt, honest, straightforward, businesslike and respectable. Take it or leave it?" Would that school get no students? There is every reason to believe that the school would get students—plenty of them. Moreover, there is every reason to believe that they would be the best, the most eager, the most self-respecting students ever seen in a medical school.

Medical practice is changing. Medical education is changing to keep pace. Why not change the financing of medical education at the same time—take it out of its archaic past, make it adequate and stable, give it decency and honesty? If someone wants the financial reward of being a doctor, he should be more than willing to pay for it.

Also involved in the financing of medical schools is one of the great issues of the day—private medicine vs. state medicine. The advocates of private medical practice should recognize that one of the greatest threats to its continued existence is free or subsidized medical education, subsidy from any source. The increasing extent to which medical education is a charitable enterprise and the decreasing extent to which students pay for their own education will lead inevitably to a cry for salaried physicians paid by the state and paid less and less. Why, the cry already is, should doctors who don't pay for their training be allowed to profit from it? That is the pressure which comes from outside. More important is the pressure which comes from within. The medical student who has had dinned into his ears, year after year, the wail of the educators that he does not meet the bills for his education, develops such a feeling of guilt that he cannot as a doctor stand up to fight for his freedom.

Regrettable as it may be, it is axiomatic in our society that he who accepts charity gives in return his own freedom. Any plan that would allow the doctor the respectability of financing his own education would be a great deterrent to the state control of medicine.

In considering the proposal that doctors, after graduation, pay back to the school the cost of their education, an objection is sure to be raised that some doctors could not afford to do so. While it would be easy for the average practicing physician to pay off his full indebtedness to the school, what about those who go into research and teaching? At first the problem seems insurmountable, but truthfully it has the simplest kind of solution. The question needs only to be changed around and asked this way: why are teachers and research workers in medical schools paid so little that they cannot meet their indebtedness for their education? That is the decent question, and the answer is that they should be paid more—much more. Further, if tuition were raised to the level of full cost and doctors were allowed to pay for their own education, the schools would have sufficient funds to pay their faculty proper salaries. It would be easy, and with such a change a real and insufferably plaguing problem would be honorably met.

Perhaps there are many other arguments on the subject of financing medical schools. Certainly more are to be expected, both pro and con, and all should be voiced and heard. But from whatever side the problem is approached, the one significant question must be kept clearly evident: is there any real reason why doctors should not finance their own education?

Group Instruction in the Art and Techniques of Lecturing

JULIUS H. COMROE JR.

The Journal is pleased to announce that the final report of the 1953 Teaching Institute on Physiology, Biochemistry and Pharmacology, of which Dr. Comroe was chairman, will be published as Part 2 of the July issue.—*The Editors*

BEFORE the 1953 Teaching Institue sponsored by the Association of American Medical Colleges on "The Teaching of Physiology, Biochemistry and Pharmacology," a questionnaire was sent to more than 1,200 teachers in these three basic medical sciences to obtain information and opinions on many problems in teaching. Two of the questions asked were:

1. Do you believe that instruction in the art of teaching the basic medical sciences can improve an individual's teaching ability if he is not a "born teacher?" Only about 4 per cent answered "never;" the remainder answered "occasionally" or "usually" in equal numbers.

2. Would you enroll in a course of instruction in teaching techniques (with emphasis upon teaching the basic medical sciences to medical students), if given by acknowledged experts? Approximately 72 per cent of the teachers answered in the affirmative,* indicating that the great majority were willing to learn more about the art and techniques of teaching if a suitable means were available.

Some faculty members, however, expressed the opinion that (a) medical teachers would be *unwilling to* accept "professional educators" in schools of education as experts in the field of medical education, or (b) that there were no acknowledged experts among teachers in the basic medical sciences, or (c) that if there were, these would be reluctant to claim expertness. I would like to recount here briefly a way of helping instructors in the art and science of lecturing that I have used for the past several years, which does not require the participation of an "expert." A somewhat similar system was also employed successfully in Canada in the summers of 1950 and 1951 under the sponsorship of the National Conference of Canadian Universities (see T. H. Matthews in *The Universities Quarterly*, 1951; D. L. Thomson in "School and Society," 1952).

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*55 per cent of department chairmen, 59 per cent of professors, 75 per cent of the associate professors, 81 per cent of the assistant professors, and 86 per cent of the instructors answered in the affirmative.

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I asked my staff if six to eight would volunteer to cooperate in a group enterprise directed toward improvement of the lecturing ability of every member of the group. Each member of the group was asked to prepare a 15-minute talk, preferably one illustrated by chalk diagrams or lantern slides. The subject of the talk was unimportant but the speaker was asked to state at the outset what he intended to present and was required to complete his presentation within the scheduled time. The talk was recorded by a soundscriber.

The audience consisted of the other members of the group, each of whom was aware that he would be speaker during some subsequent period. Every member of the audience was assigned a specific task. One was usually asked to take notes, two were placed at far corners of the room to determine whether the talk was audible and the slides or diagrams clearly visible, one was to pay particular attention to distracting or annoying mannerisms or attitudes of the speaker and speed of presentation, one to note whether the speaker's use of English was correct and precise and two to evaluate whether the material was presented in some logical order and the goal of the presentation achieved.

At the end of the 15-minute period the speaker was given the recording and asked to listen to it critically in another room. While he was doing this, the audience discussed the talk fully and summarized both the good and bad aspects. The speaker then returned to the room and was asked to give his own criticisms first. These were followed by the presentation of the reactions, comments, praise or criticism of the audience.

Points of disagreement between the speakers and the audience could usually be resolved by a play-back of the recording. The group as a whole then agreed upon the important aspects in which the speaker needed improvement. These were written down so that they were available at the next performance of that particular member of the group, in order to evaluate his progress.

In my opinion, it is very important for the success of the venture that individuals *volunteer* for this plan and that each member be "lecturer" in turn; if the chairman of a department is a member of the group, he must be a working member and preferably give the first presentation. The chief advantage of the group system is that no one member of the faculty sets himself up as an authority or expert in teaching. I have noted that the criticism of the audience, always being a group opinion, is invariably accepted by the lecturer, whereas, in my past experience, the opinion of a single individual is often rejected as representing a prejudiced point of view. Another advantage of the group system is that, since each member of the audience will eventually be the lecturer, the criticisms offered are thoughtful ones.

I have no objective way of evaluating the success of this plan, but it is my general impression that it has hastened the development of lecturing ability in a number of those who have participated. Emphasis is not placed wholly on elocution and no attempt is made to train a mediocre speaker to be a brilliant orator. Instead, stress is laid upon logical presentation, careful time allotment, the ability of the lecturer to estimate the level of the audience, and upon the many details of presentation which make a lecture more effective.

The chief disadvantages of the system are that (1) it is directed only toward improving a teacher's ability to lecture and not to conduct a conference or to direct laboratory work; (2) it cannot help those who choose not to volunteer; (3) the conditions under which the lecture is given may place some of the lecturers under a psychological handicap and (4) it may make an individual unduly sensitive regarding his deficiencies or mannerisms, so that his performance may at least temporarily become worse. This last point is not serious because a group composed of working members is usually a sympathetic group which avoids harsh comments.

No single method of teaching teachers will be successful in all circumstances. The method described is a simple one, requires no "experts" and may be worthy of more extensive trial in those medical communities dedicated to the improvement of medical teaching.

COMMISSIONS AND LIABILITY FOR SERVICE

The National Advisory Committee to Selective Service has announced that due to the requirements of the military services for physicians between July 1, 1954 and June 30, 1955, those physicians having obligations for military service in Priority I, Priority II and that portion of Priority III born after August 30, 1922, probably will be called to duty. The only exceptions are those cases of individual physicians who occupy positions that have been declared essential in medical practice in remote communities or physicians who hold essential positions on medical faculties.

Because of new processing regulations, it will take much longer to issue commissions after applications are filed than has been the case in recent months. Therefore, it is urged that every effort be made to have those physicians who will finish internships and residencies by July 1 apply at once for commissions so that there will not be a protracted waiting period between the end of the hospital year and the call to active duty.

Editorials and Comments

Our Obligation to World Medicine

In the early years of the century and up until 1939 Europe was the medical center to which physicians of all countries flocked for their advanced work. The end of World War II, however, marked the end of that era.

Two wars, plus the bigotry and purging of the Hitler regime, had decimated medical faculties and reduced seriously the potential for medical research and advance in the European medical schools. The medical schools of the United States, however, had undergone the reorganization and reformation sparked by the Flexner report of 1910, and were in a period of rapid growth and scientific development which even the two world wars failed to retard seriously.

As the inevitable result of this combination of circumstances, the United States has found itself since 1946 the mecca for students of all nationalities seeking advanced work in medicine. It is essential, therefore, that we analyze this new situation and determine what obligations must be met if the United States is to live up to this new and important responsibility.

Should we bend our efforts chiefly toward expanding our medical schools to accommodate large numbers of foreign-born undergraduate medical students? The answer to this question is no. United States medical schools are finding it difficult to expand faculty and facilities fast enough to meet the needs of American students. And even if many places for foreign students were developed in our undergraduate medical colleges, it is very likely that such prolonged study and stay would result in marriage and settlement in this country and a very small return of students at completion of their studies to their country of origin. That the majority of our admission committees are of this opinion is evidenced by the medical college admission figures for the fall of 1953.[1] Of 60 Canadian applicants, 12 were accepted; of 224 applicants from other foreign countries, 72 were accepted.[1]

Should we relax our licensure laws so that foreign physicians might freely have the experience of independent practice in this country and then return to their native country? The answer to this is obviously no. Every effort should, of course, be made to provide placement for capable foreign physicians displaced through no fault of their own, and more than 1,700 such physicians have been resettled in the U. S. since 1945.[2] Since 1930 more than 9,700 foreign-born physicians have passed examination for licensure to practice in this country.[3] But there are two sound reasons why our licensure laws should not be relaxed: first, our population needs and expects protection against unqualified practitioners of medicine whether foreign-born or native-born; second, few foreign physicians after licensure and independent practice in this country will return to their native countries, with the result that the United States with one physician to each 750 of its population will be in the position of taking physicians from countries with only one physician to each 1,100 to 1,500 of its population.

Should we encourage foreign-born physicians, with their undergraduate training behind them, to come to the United States for advanced medical training in the form of teaching fellowships? The answer to this is definitely yes. This we can do without reducing the educational opportunities for our native students, without loss of protection of our population against unqualified practitioners and with advantage to the foreign physician and the country from which he comes.

Providing that we can properly assure ourselves that the applicants are bona fide graduates of medical schools listed in the World Health Organization's "Directory of Medical Schools;" that they are desirous of obtaining advanced medical training and then returning to their native country to practice, and providing our hospitals can develop effective placement and supersensory procedures, this would appear to be by far the most promising way in which the United States can meet its obligations to world medicine.

Even this effort, however, may result in disappointment rather than fulfilment if foreign physicians are not helped to choose wisely from among the many internships, assistant residencies and residencies available. A foreign physician, who goes to expense and trouble to come to this country for advanced training and then finds that the hospital of his choice is giving him a great deal of routine ward work but very little in the way of actual instruction, will certainly be disappointed and resentful, and rightly so, since the primary objective in all such positions is education not service.

Certainly, student visas should be given only to those foreign physicians going to United States hospitals approved for internship or residency training. Of the 11,006 internships in the 856 approved hospitals and the 22,763 assistant residencies, residencies and fellowships in the 1,159 hospitals approved for such training in 1953-54,[4] it is estimated that about 1,800 of the internships and about 3,700 of the residencies are filled with foreign-born male physicians making up about 24 per cent of the male incumbents of the internships and about 21 per cent of the male incumbents of the residencies. This represents a medical educational operation of considerable size involving important international relations. It is the obligation of our medical schools and hospitals and of our medical profession to see that it is carefully planned and carried out in a way that is satisfactory for all concerned. Certainly it must be so managed as to insure the return of the great majority of these thousands of foreign physicians with increased knowledge and skills to their native lands, where they are so badly needed.—D.F.S.

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[1] John M. Stalnaker: "The Study of Applicants for Admission to U. S. Medical Colleges—Class Entering in 1953-54," *Journ. Med. Edu.*, Vol. 29, No. 4, April 1954.

[2] Figures given by Dr. Alex M. Burgess, president of National Committee for Resettlement of Foreign Physicians, at a meeting of Committee on Evaluation of Foreign Medical Credentials, April 30, 1954, in Washington, D. C.

[3] Donald G. Anderson, M.D., and Anne Tipner: "Medical Licensure Statistics for 1952," *J.A.M.A.*, Vol. 152, No. 5, May 30, 1953.

[4] Edward H. Leveroos, M.D. and Warren R. Von Ehren: "Approved Internships and Residencies in the United States," *J.A.M.A.*, Vol. 153, No. 4, September 26, 1953.

The Supply of Basic Science Teachers

IT IS COMMON KNOWLEDGE that career basic science teachers in our medical schools have been in short supply for many years, but particularly since World War II. Manlove, Anderson and Tipner report,[1] for example, that for the present academic year 1953-54 there are 47 new and 73 budgeted unfilled full-time positions in the preclinical departments of our 79 medical schools and Hinsey[2] in 1950 called attention to the high proportion of medical teachers of senior rank who are over 60 years of age and will require replacement in a few years.

A report recently made by Frank Bowles[3] on the future supply of scientists gives definite hope that relief for this shortage is in sight.

Defining the future as 20 years and a scientist as "one qualified to practice as a professional scientist by virtue of the possession of a Ph.D. in one of seven fields: physics, chemistry, biology, mathematics, geology, astronomy and psychology," he presents some very encouraging figures. In 1951-52 the figures were as follows: there were 2,114,000 in the 18-year-old age group. Of these 1,186,000 graduated from high school, 436,000 entered college, 265,000 will graduate from college, 5,300-6,000 of them will receive doctorate degrees. In 1969-70 the increases all along the line will be staggering. There will be 3,364,000 in the 18-year-old age group. Of this group, 2,583,000 will graduate from high school, 912,000 will enter college, 656,000 will graduate from college and 16,000 will receive Ph.D. degrees if present trends continue.

Though there will be a marked increase in the number of the age group, even more important will be the percentage increase in high school graduation, college attendance and graduate school attendance. As early as 1957 a production of 6,000 Ph.D.'s is expected. It is further estimated that about 55 per cent of all Ph.D.'s granted are in one of the seven science fields. Therefore, in 1957 there will likely be turned out 3,300 scientists and in 1975, 8,000 scientists.

Dr. Bowles points out that these prognostications are based upon trends as now identified and there are many factors that modify these trends. It is possible that our higher educational system will fail to adjust itself to accommodate the greatly increased number of science students. The demands of the engineering profession may reduce the number of the potential doctoral candidates.

Admitting that all such prognostications are fraught with many uncertainties it would at least appear likely that our medical schools will have larger numbers of qualified students who wish to prepare themselves for a career in teaching and research in the basic medical sciences. If we are to make the best use of this golden opportunity we must be prepared to provide the increased graduate training facilities that will be needed.—D.F.S.

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1. Francis R. Manlove, M.D., Donald G. Anderson, M. D. and Anne Tipner: "Medical Education in the United States and Canada," *J.A.M.A.*, Vol. 53, No. 2, September 12, 1953.
2. Joseph C. Hinsey: "Maintenance of a Continuing Supply of New Faculty Members," *Journ. Assn. Am. Med. Coll.*, Vol. 25, No. 6, November 1950.
3. Frank Bowles, Director, College Entrance Examination Board: "The Future Supply of Scientists," *Educ. Record*, Vol. 35, No. 2, April 1954.

NEWS DIGEST

Runyon Fund Allocations

Cancer research grants to eight institutions and 23 fellows, reaching a new high, were made during April by the Damon Runyon Memorial Fund for Cancer Research.

The April allocations, totaling $234,032, brought such grants by the Runyon fund to a grand total of $7,852,318, distributed in 432 grants and 276 fellowships, in 175 institutions in 48 states, the District of Columbia and 15 foreign countries.

Blakeslee Award

The American Heart Association announced recently that the Howard W. Blakeslee award for outstanding scientific reporting in the field of heart and blood vessel diseases will be divided into several awards to cover specific categories of newspapers, magazines, radio and television, instead of the single award established last year. The exact number of awards and the categories from which the winners will be selected by the judges are to be determined later.

It was also announced that presentation of the 1954 awards has been deferred until the combined meeting of the second world congress of cardiology and the 27th scientific sessions of the American Heart Association, to be held September 12-17 in Washington, D. C. The Blakeslee award originally was scheduled for presentation at the association's annual meeting this spring.

Commission Applications

Physicians completing their internship in 1954 and dental students graduating in 1954 are advised by Dr. Frank B. Berry, assistant secretary of defense (health and medicine), to apply for a commission in one of the military departments before the end of their internship or before graduation from dental school.

Applications will be considered by the three military departments, and by the Navy and Air Force for physicians who desire active duty prior to September 1954. Those desiring active duty after September 1954 may submit applications to any of the three military departments.

Dr. Berry emphasized that applications for commissions should be made as early as possible to assure consideration being given to making the applicant's call to active duty coincide with completion of his internship or dental education.

Dr. Berry pointed out that if his application was not submitted until the completion of internship, or graduation from dental school, the individual probably would be faced with waiting a period of from two to 12 months prior to call, during which time he might not have any productive employment.

School of Aviation Medicine

Brig. Gen. Harold H. Twitchell, director of professional services in the office of the Air Force Surgeon General, addressed a class of 35 medical officers on their graduation from the School of Aviation Medicine, April 29, at Randolph Field, Texas. Among the surgeons completing the primary course in aeromedical procedures is Col. Duk Seung Chang, surgeon general of the Republic of Korea Air Force. Though officers of 38 foreign countries have taken the course in recent years, Colonel Chang is the first to enroll in it after his appointment as surgeon general.

New Alpha Epsilon Delta Chapter

The Rhode Island Alpha chapter of Alpha Epsilon Delta, the national premedical honor society, was installed at Providence recently. Charter members of the chapter included 24 students and six faculty members.

Industrial Medical Association

Physicians in industry, representatives of management and of labor met for the first time at the Industrial Medical Association convention, April 27-30 in Chicago.

The aim of the conference was to determine ways and means of eliminating "some of the mystery of the industrial physicians' work," according to Dr. R. C. Page, general medical director of Jersey Standard and the president-elect of the association.

Medical Schools Section, ACPRA

The Medical Schools Section of the American College Public Relations Association will be held at the Hotel Roosevelt, New York City, on June 21-23.

Panel discussions will be held on "Public Relations Problems and Activities in Our Medical Schools;" "Medical School Publications;" "Lessons Learned from the Handling of Big Stories in Medicine and Science, 1953-54," and "Medical School Fund Raising and Development."

Dr. John L. Caughey Jr., associate dean, Western Reserve University school of medicine and chairman, Committee on Public Information, Association of American Medical Colleges, and Dr. Dean F. Smiley, secretary of the AAMC and editor of the Journal of MEDICAL EDUCATION, will participate in the first discussion.

Commonwealth Fund

Dr. John C. Eberhart joined the staff of the Commonwealth Fund as executive associate on March 15. He succeeds Mildred C. Scoville, who has retired after 30 years of work in the development of child guidance and psychiatric programs, professional education and the integrating of psychiatry in medicine and public health.

Dr. Eberhart was formerly an officer of the Public Health Service, and during the past five years has been chief of the research grants and fellowships branch of the National Institute of Mental Health.

Credit for AMA Section Meeting

Reserve retirement point credits may be earned by Reserve Medical Corps officers on inactive duty who attend the sessions of the section on military medicine during the annual meeting of the American Medical Association, June 23-25, in San Francisco.

This authorization covers eligible physicians who are medical corps officers of the U. S. Army, Navy and Air Force reserves. Point credits will be awarded eligible reserve officers on the basis of one for each day of attendance, provided sessions attended total more than two hours.

Japan Medical Congress

The Japan Medical Congress will hold its 14th session in Kyoto, Japan, April 1-5, 1955. The congress, which is to be held every four years, hopes to attract men from all branches of medical science to compare medical progress in various countries.

Army Hospital Training

For six weeks during the summer, three Army hospitals will be hosts to 45 junior and senior medical students. They are Walter Reed Army Hospital, Washington, D. C.; Letterman Army Hospital, San Francisco; and Fitzsimons Army Hospital, Denver.

The students will familiarize themselves with the standards of military medicine as practiced in the Army hospitals and, in addition, receive instruction in internal medicine, surgery and their subspecialties. Forty hours per week will be devoted to curricular activities. Participating students will be carried on a "student-employee" status under Civil Service. Selected medical schools within the geographical areas of the hospitals have been requested to nominate principal and alternate students for voluntary participation in the program.

Lutheran Scholarship Fund

The Lutheran Church, Missouri Synod, has recently made available to the Lutheran Medical Mission Association an undisclosed amount of money to be used as a scholarship fund for communicant members of the church who are now attending medical schools in this country and who may be interested on graduation in a career of service in the foreign mission field.

Proctology Awards

The International Academy of Proctology will present gold, silver and bronze awards and certificates to the "three most outstanding world proctologists" each year beginning with the 1955 annual meeting.

The academy also voted three-year fellowships in coloproctology worth $1,000, $900 and $800 apiece, to be given annually to three outstanding medical institutions.

Army Internships

Final selection of 150 senior medical students in Army hospitals has been completed, according to an announcement by Maj. Gen. Silas B. Hays, Acting Surgeon General of the Army.

Representing one Canadian, one Puerto Rican and 49 American medical schools, the students will be commissioned upon graduation and on July 1 will be called into active duty as first lieutenants in the medical corps of the United States Army Reserve. Upon completion of the 12-month internship they may choose to continue in the Army or return to civilian life unless they have obligations under the doctor draft law, in which case they must satisfy those obligations.

Each of the 150 will serve a rotating internship, spending four months in surgical service, four in medical services, two in obstetrics and gynecology, one in psychiatry and neurology and one in any of the following electives: laboratory, ophthalmology, otolaryngology or physical medicine.

Twenty-two of the interns will serve at Brooks Army Hospital, Fort Sam Houston, Texas; 16 at Fitzsimons Army Hospital, Denver; 17 at Letterman Army Hospital, San Francisco; 16 at Madigan Army Hospital, Tacoma; 22 at Tripler Army Hospital, Moanalua, Oahu, T. H.; 13 at Valley Forge Army Hospital, Phoenixville, Pa.; 22 at Walter Reed Army Hospital, Washington and 22 at William Beaumont Army Hospital, Fort Bliss, El Paso.

Haiti Health Problem

Yaws, the tropical disease that until 1950 affected approximately one-third of the rural population of Haiti, reaching 50 per cent of the inhabitants in some areas, has been all but conquered by the Haitian government in cooperation with the Pan-American Sanitary Bureau, Regional Office of the World Health Organization and with financial assistance from the United Nations Children's Fund. Crews of Haitians were recruited into teams to cover the whole republic, district by district, with house to house visits.

National Tuberculosis Association

The 50th anniversary meeting of the National Tuberculosis Association was held on May 17-21, in Atlantic City. The meeting was under the joint auspices of the medical section of the association, the American Trudeau Society and the National Conference of Tuberculosis Workers.

Scientists from Europe, Asia, South America and Canada met with American health workers in a week of special sessions arranged according to medical, community action, nursing and general interests. More than 80 exhibits were on display.

The Will Ross Medal was awarded posthumously to Leigh Mitchell Hodges, who died early in April. Mr.

Hodges was a columnist on the Philadelphia *North American* when the first Christmas seal sale was held in this country in 1904, and played an important part in its success.

Student AMA Elects

The fourth annual convention of the Student American Medical Association was held May 1-3 in Chicago.

John A. Oates Jr., a sophomore at the Bowman-Gray School of Medicine of Wake Forest College, was elected president. Other officers are: Daniel Heffernan, vice president; Donald C. Overstreet, treasurer, and Russell F. Staudacher, executive secretary (re-elected).

The executive council was also selected at this meeting, and includes a student each from Nebraska, Wisconsin, Marquette, Boston, Medical College of Virginia, Minnesota and Oklahoma.

Accreditation Commission

Dr. Kenneth B. Babcock has been appointed director of the Joint Commission on Accreditation of Hospitals. He was formerly director of the Grace Hospital, Detroit. Dr. Babcock succeeds Dr. Edwin L. Crosby, newly appointed executive director of the American Hospital Association.

College Film Exchange

The Medical Audio-Visual Institute of the AAMC has taken the first step toward a medical college film exchange by asking the medical colleges of the United States for information on film materials they have produced. A significant number of films and filmstrips have been made by individual schools for report, research or teaching purposes.

Plans call for the collection and cataloging of these materials by the institute. They will then be available to all the medical schools for research and teaching purposes. In addition to facilitating a free interchange of materials, the exchange will provide a source of information on what has been filmed, and thus prevent unintentional duplication of film material.

Film information forms may be obtained from the medical audiovisual coordinator in each school, or by writing the Medical Audio-Visual Institute, 185 N. Wabash Ave., Chicago 1, Ill.

College Briefs

Albany

Dr. GERALD S. KANTER, department of physiology, has received for the second consecutive year a research grant from the U. S. Air Force. Both grants total $13,500.

Dr. Kanter is studying the effects of heat on the occupants of a plane traveling at high speed. He has been experimenting with animals and humans to discover what results high temperature has upon kidney function and body chemical regulation, and he is now engaged in work with controls aimed at preventing heat dehydration and heat stroke.

Boston

Dr. SANFORD B. HOOKER, professor emeritus of immunology, received the school of medicine alumni association's first "distinguished service" scroll at the annual meeting on May 1.

Dr. Hooker taught at the university for nearly 40 years, prior to his retirement last year

Chicago Medical

New appointments to the faculty include Dr. EUGENE I. FALSTEIN, clinical professor of psychiatry, and Dr. EMANUEL E. MANDEL, associate professor of medicine.

Faculty advancement in rank was given to Dr. LEON H. STRONG, who becomes professor of gross anatomy; Dr. HANS ELIAS, associate professor of microscopic anatomy; Dr. HAROLD KOENIG, associate professor of neuroanatomy and Dr. KURT STERN, associate professor of pathology.

Dalhousie

The faculty of medicine has decided to increase its entrance requirements from two to three years of premedical work. This action will come into effect with the entering class in medicine in 1956 and will thus apply to students starting their premedical work in 1954.

For the past few years Dalhousie has been practically alone in admitting students into the medical school with two years of college education. Since 1951 the American Medical Association and the Association of American Medical Colleges have required three years of college training and recommend four in order that the students may receive a broad general education before entering medicine.

Duke

The virus research team headed by Dr. JOSEPH W. BEARD, professor of experimental surgery, has been awarded a $10,000 Damon Runyon Memorial Fund grant for cancer research.

The grant will help support a project on leukosis in chickens, and will be used to keep in operation a electronmicroscope in counting virus particles. The check for the grant was presented by DAN C. GUNTER JR., chairman of the North Carolina membership council of the Fraternal Order of Eagles.

Georgetown

Dr. WILLIAM PARSON, professor and director of the department of medicine, University of Virginia School of Medicine, served as professor of medicine pro tem at the school of medicine during the week of April 26-May 1.

Dr. Parson's appointment as a pro tem professor continues an annual custom of four years' standing whereby outstanding teachers and physicians from other medical schools are invited to serve for a short time at the school of medicine for the purpose of broadening the educational outlook for students and doctors at the medical center.

Prior to assuming directorship of the department of medicine at Virginia in 1949, Dr. Parson was assistant professor of medicine at Tulane University. His field of special interest is in endocrinology and metabolic diseases.

Dr. HERBERT SPENCER GASSER, Nobel prize winner and director of the Rockefeller Institute, has been awarded the Kober Medal for 1954. The medal is awarded annually by the Kober Foundation at Georgetown to a member of the Association of American Physicians who has contributed to the progress and achievement of the medical sciences or the medical profession.

Dr. Gasser, who has been the director of the Rockefeller Institute since 1935, was awarded one-half of the 1944 Nobel Prize in physiology and medicine for his researches on the differentiated functions of single nerve fibers.

The award of the Kober medal is provided for by a $16,000 endowment fund established in 1923 by Dr. GEORGE M. KOBER to commemorate the 50th anniversary of his graduation in medicine from Georgetown. The fund also pays the expenses of an annual lecture, a scholarship in the Georgetown Medical School, and a gold medal to be awarded to the best student in hygiene.

George Washington

Two grants, totaling $19,465, have been awarded to George Washington University scientists for the study of organisms involved in the resistance to, and recovery from, intestinal infections, such as shigellosis, a form of dysentery which often causes trouble on Navy ships.

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One grant for $10,000 was given by the U. S. Office of Naval Research, while the other for $9,465, was awarded by the National Institutes of Health of the Public Health Service. The research provided for by these grants will be carried out under the direction of Dr. LELAND W. PARR, professor of bacteriology and Dr. MARY LOUISE ROBBINS, associate professor of bacteriology.

Illinois

Out of 146 seniors in the college of medicine who participated in the matching plan for hospital internships, 133 received their first preference.

In addition to those who were matched to the hospital of their choice, 11 students received their second preference. Only two students were not matched, and they expect to be located soon.

Cook County Hospital was the most common choice of the students, and 46 seniors will intern there. Nine students will intern at the University Research and Educational Hospitals. Students are matched for internships through the National Intern Matching Program.

Mrs. CAROL COOLEY has been appointed head of the department of medical social work, effective July 20, 1954. At the present time, Mrs. Cooley is associate executive secretary of the health division of the Welfare Council of Metropolitan Chicago. The department of medical social work provides instruction to students in the college of medicine, students in the school of social work who are specializing in the field of medical social service, students in occupational therapy and students in the school of nursing.

Indiana

The 7th annual alumni day of the school of medicine was held on May 7. Guest speakers included Dr. FRANK G. DICKINSON, director of the American Medical Association's bureau of medical economic research; Dr. ROBERT A. MOORE, vice chancellor-elect of the schools of the health professions, University of Pittsburgh, and Dr. JOHN D. VANNUYS, dean of the medical school.

The day's activities included limited attendance clinics, campus tours, an alumni business meeting and the traditional fried chicken and strawberry shortcake picnic.

Dr. EMILE HOLMAN, professor and chairman of the department of surgery, Stanford University, was appointed George A. Ball visiting professor in surgery. He spent the week of May 10 on the campus for a series of lectures, ward rounds and clinics.

Jefferson

The entire student body attended American Medical Association Day on May 5. This day, the first of its kind in this country, was arranged by the Jefferson chapter of the Student American Medical Association.

The class of 1954 recently presented to the college a portrait of Dr. LEWIS C. SCHEFFEY, professor and head of the department of obstetrics and gynecology, commemorating his accomplishments since his graduation in 1920.

Marquette

A five-day program, highlighted by a conference on hemorrhagic diseases, marked the formal opening and dedication of the new EBEN J. and HELENE M. CAREY memorial library addition to the school of medicine.

The $1,100,000 addition is named in honor of the late Dr. Carey, who was dean of the school, and the late Mrs. Carey.

In addition to American physicians, Dr. TAGE ASTRUP of the Carlsberg Foundation, Copenhagen, Denmark, and Dr. ALFREDO PAVLOVSKY of the Naval Hospital, Buenos Aires, Argentina, will attend the hemorrhagic conference.

Medical Evangelists

The U. S. Armed Forces have awarded a new contract to the school of tropical and preventive medicine's department of herpetology and ichthyology for the further investigation of their poisonous fish project. The contract, for $49,740, started April 1.

Michigan

In the event of atomic warfare, the university's medical facilities would be increased six-fold. The university hospital has worked out a joint plan with Civil Defense officials to make emergency changes which would permit the treatment and hospitalization of 6,000 casualties.

Should an attack come, university officials have approved emergency use of three dormitories which lie directly south of the hospital.

The defense plan calls for a screening of casualties at points of evacuation. When they arrive in Ann Arbor, all victims of radiation burns would be sent to one dormitory. Those suffering other forms of radiation sickness would be hospitalized in another and patients requiring general observation would be sent to the third.

Dr. ROBERT C. GESELL, chairman of the department of physiology since 1923, died on April 19, at the age of 68.

Dr. HOWARD B. LEWIS, 67, chairman of the department of biological chemistry for 32 years, died on March 7 after a long illness.

The Kresge medical research building was dedicated on May 15. The building is a gift of the S. S. Kresge Foundation, dedicated to research in medicine and related fields and to the training of investigators in the basic and applied medical sciences. The basic cost of the building was $3,500,000.

Minnesota

Dr. HAROLD S. DIEHL, dean of the medical school, served as one of three United States delegates to the 1954 Congress of the World Health Organization, which was held May 4-22 in Geneva, Switzerland. Other U. S. delegates were Dr. LEONARD SCHEELE, surgeon general of the Public Health Service, and Dr. CHESTER KEEFER, assistant secretary for health affairs in the Department of Health, Education and Welfare.

State U. of N. Y.-Brooklyn

The college of medicine and the Kings County Hospital were hosts on April 23-24 to 60 neurosurgeons of the United States and Canada at the 45th annual meeting of the Society of Neurological Surgeons.

A new pediatrics research laboratory, with equipment largely provided by the Junior League of Brooklyn, was opened recently. The pediatrics department is undertaking five new research projects this year, on diseases of the kidney, oxygen therapy and retrolental fibroplasia, physiology of the newborn's breath, the critical first three days and brain injuries from bilirubin and other pigments.

N.Y.U.-Bellevue

Dr. DONALD A. COVALT, associate director of the institute of physical medicine and rehabilitation, recently left for Cairo, Egypt, for a period of two weeks. He will work with the Egyptian ministry in developing an appropriate center for the rehabilitation of paralytic poliomyelitis cases.

Dr. Covalt's services were made available by the United States Foreign Operations Administration at the request of Dr. NUR EL DIN TARRAS, Egyptian minister of health. Before returning to the United States, Dr. Covalt will visit medical schools in Beirut, Lebanon, and Madrid, Spain.

A course in "Medical Testimony in Malpractice and Negligence Cases for Practitioners of Medicine, Law and Allied Professions," will be given for the first time by the postgraduate medical school in cooperation with the school of law.

The course will be held weekly from October 7 to March 10 under the direction of MAXWELL H. POPPEL, professor and chairman of the department of radiology. Mock trials, question-and-answer periods and other practical features simulating actual court conditions will be presented.

Oregon

The alumni association held its 39th

annual meeting on April 21-23, meeting jointly with the Oregon chapter of the American Academy of General Practice and the Sommer memorial lecture series.

Nearly a dozen doctors, representing various specialties as well as general practice, will contribute to the three-day scientific sessions.

Dr. Arthur J. Seaman, associate professor of experimental medicine, has been awarded a Fulbright fellowship for a year's study and research at the University of Oslo, Norway. He will study under Dr. Paul Owren, professor of medicine at the Norwegian university, and will work on a project on blood coagulation, particularly the body mechanism which initiates blood clotting. He will also attend the fifth international congress of the International Society of Hematology at the Sorbonne, Paris, on September 6-12.

Dr. William B. Holden, 81, professor emeritus of surgery and Portland's oldest practicing surgeon, was honored at a banquet in April by the staff of Portland Sanitarium and other doctors. Dr. Holden was a member of the faculty from 1915 until 1947.

A Public Health Service grant of $55,600 has been received through the National Advisory Cancer Council. The funds will be used by Dr. E. E. Osgood, professor and head of the division of experimental medicine, in his study of the leukemias and allied diseases.

Pennsylvania

A statewide campaign against alcoholism, being waged under the auspices of the state department of health, division of alcoholic studies and rehabilitation, was opened recently with a two-day public forum at the university.

The university's part in the project is in two phases. Under a commonwealth grant, medical research programs are currently being organized under the direction of Dr. William C. Stadie, chairman of the department of research medicine. Public forums are also to be held, under the direction of Dr. John P. Hubbard, chairman of the department of public health and preventive medicine.

Rochester

Dr. Leonard D. Fenninger, chief of the section on general medicine of the National Cancer Institute, has been appointed assistant dean and assistant professor of medicine of the school of medicine and dentistry. Dr. Fenninger was a 1943 graduate in medicine from the university.

Tennessee

Dr. James Robert Teabeaut, head of the forensic pathology section of the Armed Forces Institute of Pathology, Washington, D. C., will join the staff of the college of medicine on September 1 as assistant professor in the division of pathology and bacteriology. His employment is made possible by the Lederle faculty award.

Southwestern

A U.S. Army contract reimbursable to a maximum of $18,440 has been received for research on the factors responsible for the toxic and lethal effects of bacterial endotoxins, with Dr. A. I. Braude, associate professor of internal medicine, as principal investigator.

Wayne

The university recently became the first American university to establish a department of industrial medicine and officials stated that such training will become a part of the education of every Wayne medical student.

Dr. Arthur J. Vorwald, formerly director of the Edward L. Trudeau Foundation, will head the new department, which is an outgrowth of a program of instruction in industrial medicine given to senior medical students for the past two years with the cooperation of the Industrial Physicians Club of Detroit. The aims of the department, according to Dr. Vorwald, are research, especially on preventive measures, instruction on graduate and undergraduate levels and general community service.

Audiovisual News

Fracture Film Appraised by Schools

The film, "Principles of Fracture Reduction" (See Journal of MEDICAL EDUCATION review, June 1953), has recently completed the preview circuits for medical colleges. The purpose of the circuits is to provide an opportunity for key faculty members to see preselected AV materials with a view to future instructional use.

The following information is taken from 102 appraisal forms returned to date by the 76 medical colleges on the circuits. A total of 375 faculty members, 40 residents and 1,713 students were reported as having seen the film. The film was given the following "overall" appraisal ratings: poor, 1; fair, 15; good 44; excellent, 37; no indication, 5.

The appraisers thought the film best suited for the following audiences: medcial students, 85; interns and residents, 40; postgraduates, 16; others, 15.

In answer to: "Should this film be a part of your college library?", 40 of the appraisal forms said "yes," while 39 said "no," with 23 giving no indication.

"Is this a film you will want to rent from time to time?" "Yes," said 45 of the appraisal forms, while 24 said "no," with 33 giving no indication. For clarity it should be pointed out that many previewers who indicated that the film should be a part of the college library also said that they would want to rent it from time to time, presumably because they would not be able to purchase it even though such purchase would be desirable. The large number that gave no indication may be explained by the fact that many considered an answer to one of the questions automatically made the other question invalid.

Many comments were given on both the strengths and weaknesses of the film. Representative of the "strengths" are: "Well photographed, narrated and organized;" "First portion shows very well the principles of fracture reduction;" "Subject matter was limited sufficiently to put the main ideas across;" "Very good review of basic principles;" and "Should welcome the opportunity of projecting this film to junior class once yearly."

The chief criticisms were levelled at the portion of the film showing farmhouse emergency fracture handling to demonstrate the principles. The following comments are representative: "Last half (doctor at farmhouse) had faulty, impractical and wrong implication;" "Stress was too much on emergency treatment;" and "The film would be strengthened somewhat if more attention was given to the methods of fracture immobilization for transportation."

Distribution: Sale: United World Films, Inc., 1445 Park Ave., New York 29, N. Y. **Loan:** Central Office Film Library, Veterans Administration, Vermont Ave. & H. St., N. E., Washington, D. C. **Rental:** Medical Audio-Visual Institute, 185 North Wabash Ave., Chicago 1, Ill. $7 for one week.

Reporting on college reactions to preview circuits material will be a regular part of this section. Next month the reactions to "The Lymphatic System" will be summarized.

Summaries of Film Reviews

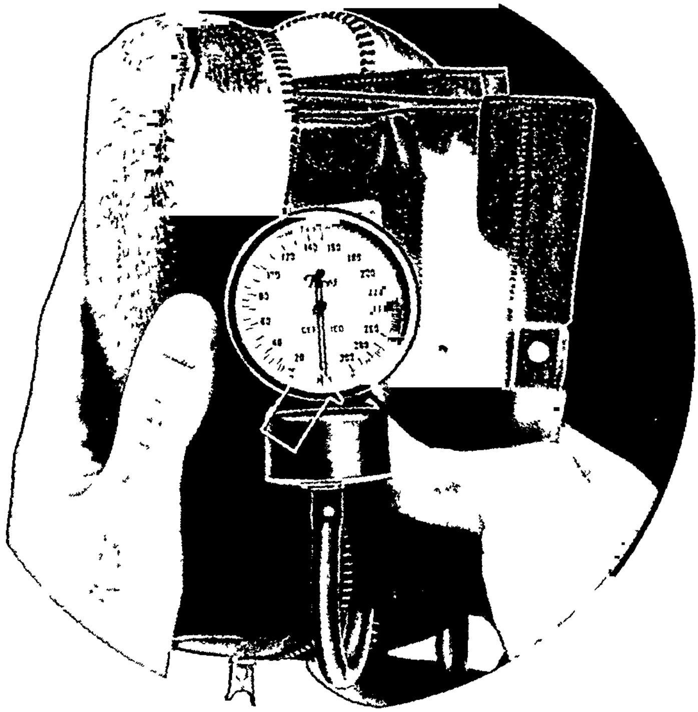
Trichomonal and Monilial Vaginitis

19 min., sd., color, 16 mm. (revised 1951).

After a historical introduction concerning the discovery of *Trichomonas vaginalis*, the four principal life changes in the vaginal epithelium and vaginal pH are charted. The anatomical and physiological changes during vaginal infections are discussed. Material on the general incidence and symptomatology of vaginitis is followed by specific clinical contrasts of moniliasis, senile vaginitis and trichomoniasis. Laboratory diagnosis is demonstrated. The principles of therapy are described. Floraquin for trichomoniasis and gentian violet for moniliasis are advocated, to be used in association with management of associated pathology.

This film is a summary medical article heard from the soundtrack and a series of disjointed illustrations on the screen. Together they cover broad and necessarily sketchy considerations of the differential diagnosis and treatment of two contrasting types of vaginitis. Floraquin is advocated for therapy of trichomoniasis without adequate reference to other

THE ANSWER IS IN THE ZERO!



YOU can always be sure a TYCOS* Pocket Aneroid is accurate as long as the pointer returns *within zero.* This easy visual check can be made after every reading. And, this Pocket Aneroid can be used *in any position.* Weighing only 19 ounces, it is ideal for house calls. Fits in a zipper case that can easily be slipped into your pocket or your bag. The exclusive hook cuff is designed to fit any adult-sized arm and cannot balloon at the edges. Our 10-Year Warranty allows free readjustments . . . even if you drop it. See this instrument at your favorite surgical supply dealer. Price **$42.50.** Made by Taylor Instrument Companies, Rochester, N. Y., and Toronto, Canada.

*Reg. U. S. Pat. Off.

Taylor Instruments **MEAN ACCURACY FIRST**

agents, and there are a number of pertinent criticisms of fact and method. Production skills are relatively inept in all aspects, but particularly unhappy in direction are the reenactments and live action shots.

As an introduction or review of the subject, and despite its real weaknesses of presentation, students and practitioners will find the film informative in its principal points of fact, but they will learn little toward diagnostic skills. A competent instructor or discussion leader can, if he chooses, readily control the material on management according to broader comparative knowledge than is presented in the film.—*A.N. and D.S.R. with MAVI Panel, June 1950.*

Audience: Practitioners, medical students.

Production Data: Sponsor: G. D. Searle & Co.: **Scientific Advisor:** J. P. Greenhill, M.D., Cook County Hospital, Chicago; **Producer:** Medical Film Guild, Ltd., New York.

Distribution: G. D. Searle & Co., P.O. Box 5110, Chicago 80, Ill., **Loan.**

Recording Oximeters and Their Applications

16 min., color, sd., 16 mm., 1953.

Principles of oximeters are demonstrated by means of light meter and red and blue dyes to simulate, respectively, oxygenated and reduced (cyanotic) blood. The Millikan ear oximeter is demonstrated and its limitation described. The Wood ear oximeter is also demonstrated; this provides absolute readings of oxygen saturation even in cyanotic patients. The merits of continuously recording oximeters are summarized. Instruments are shown in operation during studies on pulmonary function for diagnosis of congenital heart disease by intravenous injections of Evans blue dye, during catheterization of the heart, during valvulotomy for pulmonic stenosis with atrial septal defect ("rise in oxygen saturation shows no further cutting necessary"), during recovery from anesthesia and during convalescent oxygen therapy.

This is a research report film of new instrumentation helpful in the practical diagnosis and treatment of diseases of the lung and congenital heart disease. Much of the data assume advanced knowledge of cardiovascular and pulmonary physiology. The paucity of closeups and the relatively low visual analysis further limit the audience, to a certain extent, to experts in the field of cardio-vascular-pulmonary disease.

For those concerned with the day-by-day diagnosis and management of congenital heart diseases of the lungs, this film points to an apparently rugged and practical instrument for recording oxygen saturation of arterial blood.—*D.S.R., 1954.*

Audience: Anesthesiologists, thoracic surgeons, internists, pediatricians.

Reference: "The Conversion of Millikan and Wood Type Oximeters into Direct Writing Recording Instruments for Use in Surgery, in Studies of Pulmonary Function, and in Teaching Respiratory Physiology." John F. Perkins Jr., U. E. Adams and Huberta Livingstone. J. Lab. Clin. Med. 40. #3, Pages 457-478, September 1952.

Production Data: Authors: John F. *Perkins Jr., M.D., and William E. Adams,* M.D., departments of physiology and surgery, University of Chicago. 950 E. 59th St., Chicago 37, Ill., **Producer:** Tressel Studio, Chicago.

Distribution: *Tressel Studio,* 7905 S. Burnham Ave., Chicago 17, Ill., **Loan.**

Ligation and Stripping Treatment for Varicose Veins

21 min., sd., color, 16 mm., 1953.

A series of legs demonstrates saphenous varices as the surgeon describes the need for an "adequate examination, adequate operation for the individual case, adequate followup and treatment." In a male patient the surgeon demonstrates tests for incompetent perforating veins at the four common sites, and shows retrograde flow in the great saphenous vein of the left leg; incompetent veins are skin-marked. After surgical preparation of the leg, incision is made over the sapheno-femoral vein junction; tributary veins are dissected and ligated, the saphenous vein is cut at its point of entry and the fascia closed. Strippers are passed down the vein to the knee. After incision and vein ties the vein is stripped out, demonstrated and subcutaneous bleeding pressured. Stripping is carried downward to the ankle, making additional incisions, dissecting out the perforating veins and removing miscellaneous varices. The leg is bound in a pressure bandage after incision closures. The appearances of postoperative legs are seen and the need for sclerosing injection of small varices is discussed.

This excellent record and demonstration of a classical surgical method found effective in more than "2,200 legs" to be truly satisfactory lacks only true visual analysis of certain procedural points, some carefully interdigitated diagrams, notably of the saphenous vein systems and a narration more tightly tied to the pictures at introduction and ending.

Good surgeons may disagree as to the direction in which stripping is performed. Camera coverage is clean as far as it goes but is distinctly poorer in the legs seen in the outpatient settings. The surgeon narrator lends authenticity through the practical authority of his voice and manner.

For general surgeons the film is practical, helpful and at the least a good review. For medical students the film's use will gain by a prior anatomical orientation to the great saphenous vein and its connections, followed by competent discussion of the realistic considerations of surgery and postop followup.—*D.S.R. with MAVI Panel, February 1954.*

Audience: Surgeons, medical students.

Reference: 'Ligation and Stripping Treatment for Varicose Veins." H. O. McPheeters, M.D. (Publication Pending) Surgery, Gynecology & Obstetrics, 1954.

Production Data: Sponsor - Producer: Davis & Geck, Inc.; **Authors:** H. O. McPheeters, M. D., and Clarence V. Kusz, M.D., Asbury Methodist Hospital, Minneapolis.

Distribution: Film Library, Davis & Geck, Inc., 1 Caspar St., Danbury, Conn., **Loan.**

Cardiac Arrest

29 min., si., color, 16 mm., 1953.

A surgical team handling a patient with a right inguinal herniorrhaphy discovers that the heart has stopped. The anesthetist introduces a tracheal tube, begins oxygen and positive pressure artificial respiration; the surgeon cuts into the chest and massages the heart. In a series of dog hearts there are demonstrated the causes of cardiac standstill; hypercapnia and ventricular fibrillation of five etiologies; the proper steps to take in handling each are listed and shown. Where electrical shock fails, coronary perfusion with KC1 is done with the aorta temporarily clamped. Weakness of heart beat is strengthened by calcium. A continuous ECG recording on a patient under hypothermia with cardiac arrest demonstrates the steps taken and the heart reaction. In titles the film summarizes the actions of the anesthetist and surgeon.

This teaching film, with its acceptable reenactment of the cardiac arrest emergency in the operating room, presents a good rationale and simplification of emergency procedures while demonstrating their physiological bases. A rate of 40-60 heart compressions per minute (not "massage") is feasible for inexperienced operators; the film's recommendation of a 100 beat per minute rate requires substantiating evidence. In shocking the fibrillating heart a voltage of 120-165 should be mentioned along with the amperage. The proper roles of calcium and potassium in the management of cardiac arrest cases is perhaps being elucidated by this group and others in current research. Although the film lacks a professional polish, the content organization is valid and the visual documentation is good; a restrained but pointed sound track would have been helpful, and this would have reduced the number of titles. Technical photographic qualities are good except for the jumping frame line.

For all members of the surgical team this film will motivate and teach well the essentials of handling heart standstill emergencies. Naturally, the film's optimal use will be in the hands of a competent surgeon able to prepare for the film's showing and to discuss the many points which cannot be covered in a single film unit. A magnetic sound track would be most helpful.—*D.S.R. with MAVI Panel, February 1954.*

Audience: Surgeons, anesthesiologists, residents, surgical nurses.

Reference: "Cardiac Resuscitation." J. Johnson and C. K. Kirby. Surg. Clin. N. Amer. 29; 1745, 1949.

Production Data: Producer: University of Colorado School of Medicine, Denver; **Authors:** J. Cuthbert Owens, M.D., and Henry Swan, M.D., department of surgery; **Cameramen:** Glenn E. Mills, Billie Wheeler.

Distribution: The authors, department of surgery, University of Colorado School of Medicine, 4200 E. Ninth Ave., Denver, Colo., **Service Charge:** $5.

Portacaval Shunt

23 min., sd., color, 16 mm., 1951.

In a patient with hepatic pathology and portal hypertension, a right thoracoabdominal incision at the ninth rib is made. The ninth rib is resected, the pleural space opened, the costochondral segments cut, the diaphragm incised, and the liver-stomach-duodenal area of the portal vein dissected. The retroperitoneal dissection of a segment of the inferior vena cava is carried out and the portal vein is anastomosed to the vena cava by suture technique as recommended by Blakemore. The vena caval occlusion is released and tested and the portal vein occlusal tape is released. Liver biopsy is taken. Drains for the pleural space and the vascular anastomotic site are placed preceding anatomical closure in layers.

This methodical case record film which describes a procedure for alleviation of portal hypertension is simple, clear and full of practical comments from the surgeon-narrator. It demonstrates the wide exposure possible because of the thoracoabdominal approach which permits easier and safer procedures in this region. The fields are somewhat confused by the oozing serosanguineous and lymphatic seepage mentioned several times by the surgeon as a manifestation of the patient's disease process. The narration is sometimes dissociated from the screen, and the camera is static, but on the whole good surgical clarity is maintained.

For students of surgery this film is the competent and authentic record of a currently accepted procedure, filmed clearly enough to be understood and discussed in surgical seminars.

Audience: Students of surgery, surgeons.

Reference: The Right Thoraco-Abdominal Approach. John P. Heaney, M.D., and George H. Humphreys II, M.D. Annals of Surgery, Vol. 128, Pages 948-955, November 1948.

Production Data: Sponsor - Producer: Davis & Geck, Inc.; **Author-Surgeon:** John P. Heaney, M.D., department of surgery, Baylor University College of Medicine, Houston, Texas. Produced for Cine-Clinics, 1951. American College of Surgeons.

Distribution: Film Library, Davis & Geck, Inc., 1 Caspar St., Danbury Conn., **Loan.**

Gall Stone Ileus

17 min., si., color, 16 mm., 1952.

By means of titles, animated diagrams, the etiology, incidence, mortality, pathology, signs and symptoms with X-ray findings are presented. Partial intestinal obstruction by a large gallstone is demonstrated at operation, with incision and removal. A case of impacted gallstone with bowel gangrene requires resection and anastomosis. At autopsy the cholecysto-jejunal fistula is demonstrated. Spontaneous passage of a gallstone less than 2.5 cm. is shown. After cholecystostomy the matching stones are seen; diagrams summarize the case pathology. In an autopsy demonstration of gallstone ileus with gall bladder carcinoma (and cardiac failure) the fistula is demonstrated.

This simple case atlas teaching film follows the general pattern of the other films of this surgical pathology series presenting a range of cases both at surgery and autopsy. Presentation is direct, uncomplicated, of good clarity though semi-professional. A sound track would have helped augment the teaching impact.

For medical students in their introduction to surgery, the film effectively communicates the essential syndrome and pathology of gall stone ileus. General surgeons and practitioners might find the film a helpful review. Ad lib narration by a trained instructor will heighten the teaching value.—*D.S.R., 1954.*

Audience: Medical students, practitioners.

Production Data: Authors: Hilger Perry Jenkins, M.D., Wolfgang Kollert, M.D., and Raymond Kjellberg, M.D., University of Illinois College of Medicine and Woodlawn Hospital; **Animated Diagrams:** Illustration Studios, University of Illinois College of Medicine.

Distribution: Surgical Film Library, Davis & Geck, Inc., Danbury, Conn.: **Loan;** The authors: **Sale.**

Visual Surgery in the Open Heart During Hypothermia

25 min., sd., color, 16 mm., 1953.

A female child under anesthesia is rapidly cooled in an icewater bath to 31° C (and 23°); the dangers and precautions of hypothermia are discussed. After a wide transverse anterior opening of the chest, the heart is exposed, occlusion of the venae cavae is prepared for and the pericardium opened. The typical malformation of pulmonary valvular stenosis is noted. With blood flow controlled, an incision through the pulmonary artery permits intervention under visual control to relieve the stenosis. The heart is allowed to return to normal function with precautions designed to minimize air embolism. The pericardium and chest are closed and the patient rapidly warmed. In a Tetralogy of Fallot patient with infundibular pulmonary stenosis, the associated interventricular septal defect could not be closed after cutting and excision of the stenotic pulmonary tissue. In a third patient an interatrial septal defect is visualized and readily sewn together. The latter two cases are handled under hypothermia with wide exposure of the heart fields. Mortality statistics indicate that with a least these three specific congenital heart situations the methods demonstrated are of relatively low risk.

This film report of three typical cases of congenital heart disease is convincing documentation of the authors' methods, even though the precautions against air embolism are difficult to see clearly; however, even students of surgery would gain by having even bigger closeups, certain orientational diagrams, a mobile camera and less dissociation of narration and screen. For a sound film there

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1. Cass, L. J. and Frederik, W. S. Malt Soup Extract as a Bowel Content Modifier in Geriatric Constipation. Journal-Lancet, 73 414 (Oct.) 1953.

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appear to be far too many redundant titles.

Surgeons and surgical residents will find the film illuminating and instructive as an exposition of an approach and a rationale for that approach. In a field as dynamic as present-day cardiac surgery, this film should naturally be related to others of its kind in pertinent discussions.—*D.S.R., February 1954.*

Audience: Surgeons, surgical residents.

References: 1. "Cessation of Circulation in General Hypothermia, I. Physiologic Changes and Their Control." Henry Swan, M.D., Irvin Zeavin, M.D., Joseph H. Holmes, M. D., and Vernon Montgomery, M.S. Annals Surg. 138; 360, 1953. 2. "Surgery by *Direct Vision in the Open Heart During* Hypothermia." Henry Swan, M.D., Irvin Zeavin, M.D., and S. Gilbert Blount, M.D. JAMA 153; 1081, 1953.

Production Data: Producer: University of Colorado School of Medicine, Denver; **Author:** *Henry Swan, M.D., department of* surgery; **Camera:** Glenn E. Mills, Billie Wheeler.

Distribution: Henry Swan, M.D., professor of surgery, University of Colorado, department of surgery, 4200 E. Ninth Ave., Denver, Colo., **Service Charge:** $5.

The Extracorporeal Diversion of Systemic and Coronary Venous Blood Flow During Auriculotomy and Ventriculotomy

12 min., sd. (magnetic), color, 16 mm., 1954.

The author's mechanical heart is seen superficially, with its battery type screen oxygenator and extracorporeal vascular system. In a dog subject the extra-corporeal blood circuit is established by cannulation of a femoral artery and both venae cavae. Through an auricular incision the AV valve is exposed, and the blood-free right heart seen; the incision is closed, circulation reestablished and the postoperative dog demonstrated in action. In a second dog heart, auriculotomy permits removal of lethal heart worms *(Dirofilaria immitis)*. The postoperative dog is seen moving about normally. In a third dog heart, ventriculotomy exposes the blood-free right chambers and AV valve; the dog is seen in active life thereafter.

This report film concerns advances toward improved direct vision surgery of the heart valves and walls by means of a mechanical heart and extracorporeal blood circuits. The merits or shortcomings of the methods being developed will be established during the next years' developments in this kinetic field of surgical research. The cinematography is of reasonable clarity. The few titles are small and inadequate and the lack of good orientation assumes an instructor very familiar with the authors' work.

For surgical residents, surgeons and physiologists the film will provide stimulating food for seminary discussions, particularly if conducted by a skilled cardiac surgeon.—*D.S.R., 1954.*

Audience: Surgeons, physiologists.

Reference: Miller, B. J., Gibbon, J. H., Jr., Fineberg, C. *"An Improved Mechanical* Heart and Lung Apparatus." Medical Clinics of North America 37, Number 6, November 1953.

Production Data: Authors: Bernard J. Miller, M.D., John H. Gibbon Jr., M.D., Charles Fineberg, M.D., Jefferson Medical College of Philadelphia; **Cinematography:** James Magee.

Distribution: The authors, department of surgery, Jefferson Medical College, 1025 Walnut St., Philadelphia, Pa. Loan.

Contractions of the Valve of the Foramen Ovale of a New Born Lamb

2½ min., si. b&w., 16 mm., 1940.

In the freshly excised heart of a newborn lamb the atrium is widely opened. The fingers of the demonstrator expose the interatrial septum with its patent foramen ovale. Spasmodic contractile movements of the atrial myocardium show the valve-like actions of the crescentic muscular septal wall flaps.

This research film fragment emanating from an illustrious research group is only a research datum and requires knowledgeable interpretation. The sheep heart is not identical with the human heart in the newborn, but is sufficiently close to be highly suggestive of valid comparisons. The dynamic pressure elements of blood-filled atria cannot be shown in this preparation and cannot readily be extrapolated in terms of human congenital heart defects. Orientation is relatively clear, and cinematography is adequate for such a film recording.

Only informed embryologists and students of congenital heart disease will be able to utilize this film as an illustration of foramen ovale structure and function, augmenting other teaching materials.—*D.S.R. with MAVI Panel, February 1954.*

Audience: Students of congenital heart disease, embryologists.

Reference: Barclay, A. E., Franklin, K. J., Prichard, M.M.L.: "The Foetal Circulation and Cardiovascular System, and the Changes That They Undergo at Birth." Charles H. Thomas (Blackwell Scientific Publications, Ltd., Oxford), 1945.

Production Data: Authors: Barclay, A. E., Barcroft, J., Barron, D. H., and Franklin, K. J., Physiological Laboratory and School of Anatomy, Cambridge, and the Nuffield Institute for Medical Research, Oxford.

Distribution: (In U. S.) Medical Audio-Visual Institute of the Association of American Medical Colleges, 185 North Wabash Ave., Chicago 1, Ill., **Loan:** $2.00. (In G.B.) British Film Institute, 164 Shaftesbury Ave., London W.C.2, England. **Sale:** $5.

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Book Reviews

Textbook of Organic, Medicinal and Pharmaceutical Chemistry, 2nd edition

Charles O. Wilson, Ph.D. and **Ole Gisvold**, Ph.D. J. B. Lippincott Co., Philadelphia, 1954. 774 pp. with index . $10.

This book is an excellent text which covers concisely the essential formulas, chemical and physical properties and changes in structure of medicinal and diagnostic agents exhibited to the organism.

The authors' selection of drugs are all found in U.S.P. XIV, N.F. IX, N.N.R., A.D.R. and more recent literature. Although designed for pharmacy students, this material as presented would form excellent premedical training following the basic course in organic chemistry. It does not pretend to cover adequately the pharmacodynamic properties, but frequently makes use of such organization for classification of drugs. Therefore, it would appear necessary to append a section on the definition of biomedical terms to aid the less initiated.

Jan Nyboer, *Dartmouth*

Manual of Clinical Mycology, 2nd edition

Norman F. Conant, Ph.D.; **David Tillerson Smith**, M.D.; **Roger Denio Baker**, M.D.; **Jasper Lamar Callaway**, M.D. and **Donald Stover Martin**, M.D. W. B. Saunders Company, Philadelphia and London, 1954. 432 pp. with index.

For anyone interested in the clinical and laboratory aspects of medical mycology, this book, which was first published in 1944, has become an indispensable *vade mecum*. This work presented lucidly and authoritatively the pertinent knowledge in this field, cleared the air of confusing and duplicating terminology and succeeded in making intelligible the previously bewildering field of the cutaneous mycoses. The appearance of the second edition (1954) some 100 pages longer than its predecessor, is particularly welcome in the light of significant advances in mycology during the past decade. This progress is given excellent coverage in the second edition. Thus, the recognition of widespread benign histoplasmosis, the changing perspectives on the epidemiology of cryptococcosis, the major outbreak of sporotrichosis in Africa, the progress in therapy of systemic and cutaneous mycoses including the introduction of stilbamidine and hydroxystilbamidine in North American blastomycosis, the emergence of *trychophyton tonsurans* as a significant infection in the United States, etc., are all incorporated in the current edition. The bibliographies are selective, but have been well brought up to date. The illustrations are excellent and abundant; however, while recognizing that the costs might make it prohibitive without special subsidy, it would add immeasurably to the value of the illustrations of the dermatophytes and the common contaminants if the reproductions were in color. The general physician, dermatologist, student and laboratory worker will doubtlessly find this volume an indispensable guide to a field long neglected but increasingly established as of prime importance in medicine.

Morris Tager, *Emory*

Experimental Surgery, 3rd edition

J. Markowitz, J. Archibald and **H. G. Downie**. The Williams & Wilkins Company, Baltimore, 1954. 838 pp. with index.

This interesting volume, designed primarily for the teaching of dog surgery and physiological investigations, carries the reader into the fields of experimental surgery, from the first simple exercise of dog surgery well into the fields of experimental physiology.

To the novice in surgery and to the student about to engage in experimental dog surgery, it opens a field to become proficient in the technique of surgery and at the same time gain a firm foundation in physiology.

To the abdominal surgeon who has had little opportunity to do dog surgery or to keep abreast of the facts of modern physiology, the chapters on surgery of the alimentary canal, production of chronic peptic ulcer, gastric fistulae, of studies in the physiology of intestinal obstruction, motility of the isolated colon, experimental surgery of the pancreas, biliary fistulae, to name a few, are illuminating indeed.

So also the chapters on experimental

transplantation of organs; the studies in the physiology and experimental surgery of the lung, trachea, bronchi and the heart; the experimental surgery and physiology of the joints and bone, must interest those engaged in these fields.

Vascular surgery including transplants and experimental hematology, factors governing restoration of plasma protein, experimental surgery and physiology of the kidney and liver, surgery of the involuntary nervous system, sympathectomy, mechanical heart and physiology of cardiac arrest are all covered.

The text is easily readable and entertainingly written. In the words of the author, "This book aspires: we believe that the jack-of-all-trades in our profession, the general surgeon, will find it useful. So will that drawer of water, the urologist, and that hewer of wood, the orthopedist. So indeed will all workers in experimental biology; all, that is, except those incredible soothsayers of today, the Freudian psychoanalysts."

E. A. Christofferson,
Chicago Medical

Bacteriology for Medical Students and Practitioners, 4th edition

A. D. Gardner, Oxford Medical Publications, London, 1953. 278 pp. $3.

As indicated in the preface to the first edition, the aim of the author of this book is "to present shortly, readably and relevantly, as much of the vast subject of bacteriology as a medical student and practitioner needs to know." The aim to present shortly has certainly been fulfilled. This book contains approximately 75,000 words, as compared with the 400,000 to 500,000 of the shorter popular American texts. There are 27 tables and 31 line drawings, but no halftones or other photographic illustrations.

The book is certainly readable and relevant. It is clearly written and with an economy of words which I sometimes wish American textbook authors could achieve. The presentations of some rather difficult topics are remarkably clear and concise.

It is probably correct to say that the student who masters the contents of this text will be able to pass creditably most of the examinations he will be required to take, and will be able to continue his clinical work without exposing undue ignorance of most fields of infectious disease.

Protozoology (11 pages) and mycology (3 pages) are, however, very inadequately covered, and the discussions of virology and hypersensitivity are also, in my opinion, quite inadequate. Only bacteriophage and the viruses of variola, vaccinia, poliomyelitis, rabies, influenza, yellow fever and measles are discussed. Other viruses are mentioned only by name in a brief classification.

In considering a book as radically different from our conventional texts as this, the important questions are not those concerned with the adequacy of particular sections or with misstatements of fact. They are concerned with the meaning of the "needs to know" in the latter part of the author's statement of aims. Of necessity in a book of this nature, the methods of development of the knowledge presented and the nature of the evidence supporting it are minimized or omitted. No references for further reading are given. It seems to me that the clear presentation of microbiological knowledge, as it is at present, while essential is not the most important function of the teacher. The student should be prepared to understand and progress with new developments throughout the years of his practice. It is doubtful whether a text of this character could contribute much to this function.

Richard Thompson, *Colorado*

Methods in Medical Research, Volume 6

J. M. Steele, editor in chief, Year Book Publishers, Inc., Chicago, 1954. 271 pp. with index. $7.

The books of this series have a well deserved popularity among medical investigators; the announcement that Volume 6 is available will be for many "enough said." However, some of the subject matter treated in this volume will probably enjoy a more limited appeal than that in previous volumes.

There are four sections. The first, on human genetics, is essentially an abridged monograph which justifiably reveals the mathematical complexities and statistical requirements of the field; it will serve more to emphasize that much of our present thinking about genetic factors in pathogenesis is shoddy than to provide a package of readily grasped tools. The section on environmental medical research is spotty: the measurement of climatic variables is treated nonconceptually in the most superficial manner. The section on energy metabolism describes procedures but neglects the apparatuses and the general principles; the chapter on respiratory exchange, skin temperature and sweating is well done and useful. In 93 pages of elementary discussion on statistics in medical research, not even a distribution curve appears; it is difficult to see how the shallow chapters on basic concepts can be of much use even to beginners.

However, the author makes interesting observations on supposed statistical conflicts between clinical and basic research, on clinical surveys and on undesirable effects of laboratory tradition. A two-page chapter on consultation with a statistician may prove to be the most useful part of the entire section. The content and usefulness of the section on design and construction of metabolism cages is indicated by the title. Twenty-six informative pages on the rat integrate a scattered literature. Special attention is devoted to cages for radioisotope studies. Brief descriptions are given for metabolism cages for the mouse, dog and monkey.

Stewart C. Harvey, *Utah*

Annual Review of Physiology, Volume 16

Victor E. Hall, Frederick A. Fuhrman and **Arthur C. Giese.** Annual Reviews, Inc. and the American Physiological Society, Stanford, California, 1954. 559 pp. with index. $7.

The "Annual Review of Physiology" is sufficiently well established to require little general description. In brief, it serves the function of an extensive annotated bibliography on recent physiological and related research. It is an excellent reference guide for research workers and teachers in the biological sciences.

The book contains an astounding total of 4,792 references. The publication this year manifests unusual thought regarding content and organization. It may be a truism to point out that physiology has become so specialized that it is difficult, if not impossible to keep up with the major developments in each area without this review.

Many readers will find the prefatory chapter by Otto Loewi of great interest (19 references). Dr. Loewi discusses the stimulating value of certain early scientific papers in physiology resulting from the personal touch given these papers by their authors. He does not believe that the factual treatment given most present day research does much to inspire and educate students. The good researcher does not compile facts, but seeks to uncover facts of "strategic" or integrative value. The reviewer concurs in Dr. Loewi's belief that the revelation of the thought processes underlying research is of great educational importance.

The following list gives the topics covered this year, the authors and the number of references:

(1) Physical Properties of Protoplasm —Holger Hyden—300.
(2) Growth—Lester W. Sontag and Stanley M. Garn—105.
(3) Radiation Effects on Mammalian Systems—Harvey M. Patt—307.
(4) Physiological Aspects of Genetics—N. H. Horowitz and Ray D. Owen —206.
(5) Comparative Physiology of the Nervous System—C. Ladd Prosser —257.
(6) Energy Metabolism — Eugene F. DuBois—96.
(7) Respiration—Julius H. Comroe Jr. —228.
(8) The Digestive System — R. A Gregory—118.
(9) Blood Clotting and Hemostasis— —Louis B. Jaques—466.
(10) Peripheral Circulation — Henry Barcroft—341.
(11) Heart—Pierre Soulie—314.
(12) The Kidney—Robert W. Berliner—334.
(13) Excitation and Conduction in Peripheral Nerves — Alexander von Muralt—172.
(14) Somatic Functions of the Central Nervous System—John M. Brookhart—273.
(15) Visceral Functions of the Nervous System—U. S. von Euler—209.
(16) Higher Functions of the Nervous System—Robert B. Malmo—160.
(17) Hearing—Harlow W. Ades—59.
(18) Pituitary - Adrenal System — Gregory Pincus and Fred Elmadjian—240.
(19) The Parathyroids — Frederic C. Bartter—117.
(20) Reproduction—James H. Leathem —349.
(21) The Physiological Disturbance Produced by Endotoxins—Lewis L. Thomas—122.

R. A. D.

Books and Pamphlets Received

(As space permits, those with the greatest interest to our readers will be reviewed)

After High School What?

Ralph F. Berdie. University of Minnesota Press, 1954. 231 pp. with index. $4.25.

Biochemistry of Clinical Medicine

William S. Hoffman, M.D., Ph.D. The Year Book Publishers, Inc., Chicago, 1954. 649 pp. $12.

Index of Differential Diagnosis, 7th edition

Arthur H. Douthwaite, M.D., F.R.C.P. The Williams and Wilkins Co., Baltimore, 1954. 899 pp. with index. $20.

Geriatrics Medicine

Edward J. Stieglitz, M.D. J. B. Lippincott Co., Philadelphia, 1954. 675 pp. with index. $15.

General Cytology, 2nd edition

E. D. P. DeRobertis, M.D., **W. W. Nowinski,** Ph.D. and **Francisco A. Saez,** Ph.D. W. B. Saunders Company, Philadelphia, 1954. 456 pp. with index $7.75.

Annual Review of Medicine, Vol. 5

Windsor C. Cutting, editor. **Henry W. Newman,** associate editor. Annual Reviews, Inc., Stanford, California, 1954. 414 pp. with index. $7.

Fundamentals of Otolaryngology, 2nd edition

Lawrence R. Boies, M.D. W. B. Saunders Company, Philadelphia, 1954. 471 pp. with index.

The Improvement of Patient Care

Marion J. Wright, R.N., M.S. G. P. Putnam's Sons, New York, 1954. 156 pp. with appendices.

Transactions of the American Ophthalmological Society

Columbia University Press, New York, 1954. 756 pp. with appendices. $18.

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Salvatore P. Lucia. The Blakiston Company, New York, 1954. 119 pp. $3.

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Roy O. Greep, Ph.D., with 13 contributors. The Blakiston Company, Inc., New York, 1954. 918 pp. with index. $15.

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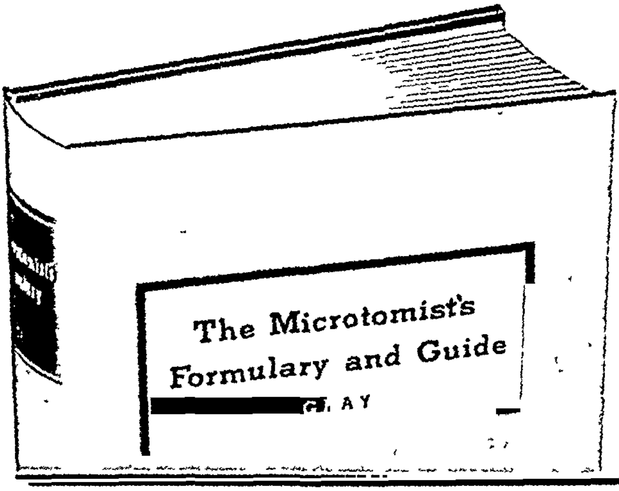
Thomas T. Mackie, M.D., ***George W. Hunter III,*** *Ph.D. and* ***C. Brooke Worth,*** M.D. W. B. Saunders Company, Philadelphia, 1954. 907 pp. with index. $12.



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Abstracts and Excerpts

Weeks, James R. **The Objectives of Undergraduate Pharmacology and How to Achieve Them**, "American Journal of Pharmaceutical Education," Vol. 18, No. 1, January 1954. (Delivered before the Section of Teachers of Biological Sciences, at the 1953 meeting at Salt Lake City.)

Before we can discuss what are to be the objectives of undergraduate pharmacology in a pharmacy school, we must first decide what is to be the overall objective of the pharmaceutical curriculum. Essentially, it is to train students for the profession of pharmacy, the great majority of them for retail pharmacy. It seems self-evident that if pharmacists are to be recognized as professional men, they must then render a professional service.

We feel that the pharmacist, broadly speaking, is to be an *expert on drugs;* a source of reliable information on the action, uses and applications of drugs, not only to physicians but also to veterinarians, farmers and the general public. I am personally convinced that there is a great need for such a service —new drug products are appearing on the market at a fantastic rate, and it is asking too much for a practicing physician to try to keep abreast of the field by critical study.

The pharmacist is the only person readily available to physicians and the general public who could answer such questions. It is the responsibility of the college to design curriculums to train men capable of rendering such professional services.

For convenience of presentation and subsequent discussion, I have considered the objectives of undergraduate pharmacology under five separate headings: (1) didactic pharmacology, (2) therapeutics, (3) laboratory pharmacology, (4) medical terminology and (5) posology.

Didactic pharmacology: For each class of similar drugs, a knowledge of their effects, an understanding of how these effects are put to practical use and a respect for their dangers and limitations.

Therapeutics: An appreciation of the problems confronting the physicians in the management of patients and clinical conditions, especially those phases of treatment not involving the use of drugs.

Laboratory pharmacology: An introduction to the design, interpretation and evaluation of experiments illustrating drug actions.

Medical terminology: Ability to use the doctor's language.

Posology: Ability to recognize excessive dosages of potent drugs.

Clark, Edward Murray. **How Motivate Student Use of the Library?**, "American Association of University Professors Bulletin," Vol. 39, No. 3, Autumn 1953.

First, I think we must recognize that the printed word, even when it is heaped up in those sacred repositories called libraries, is neither divine revelation nor satisfactory fetish for the human mind. We of faculty maturity have no doubt learned that books are only "lengthened shadows of men"—and of fallible and frequently mistaken men like ourselves at that. But often our students have not attained such maturity. For them, "the books says so" is frequently equivalent to "this *is* so." It is up to us then, to keep showing our student that as he uses our libraries he must keep his mind in suspension, his conclusions hypothetical—to teach him to test, weigh and balance, to evaluate all that he may find there.

A second principle to be understood is that library statistics are never an end in themselves. At their best, they are merely symptomatic of academic disease or health, something like the physician's basic metabolism test in which the statistical norm of satisfactory conditions is of such wide range that the test is often of very little help in diagnosis. It is easy enough to force the student to the library, to force him even to check out great numbers of books. But that is not of itself evidence that his mind is growing or that his education is proceeding as it should.

A third principle is that the library should not be allowed to become a reservoir for plagiarism. Its meat should be for digestion, assimilation and nourishment, not merely for a diarrhea of print and syntax.

A curious student will benefit from using the library. How to arouse curiosity is the question. There are things which will kill curiosity, such as busy work or made work, which should be anathema to any self-respecting teacher or student.

My own method has been to ask students at the first of the semester to hand in five subjects about which they are already so curious that they will not object to spending a good deal of time to learn more about them. Wherever possible, the student is assigned to his first choice.

The reference section of the library is explored, but always with the understanding that it is only a quick avenue toward primary materials rather than a final and exhaustive source.

I have been treating the library as if it were only a place for the intense application of a serious curiosity. Browsing and thumbing books is important; the knowledge that certain books exist for future reading is stimulating. I also believe it is the duty of every one of us to encourage his students to do considerable reading just for fun in fields outside their specialties.

Ralph P Townsend. **A Pilot Program in Postgraduate Teaching of Psychiatry to General Practitioners,** "The American Journal of Psychiatry," Vol. 110, No. 9, March 1954.

This compend is intended for an audience made up of those who have a daily, almost hourly need for psychiatric understanding and facility. This audience is the general practitioner of medicine and the medical specialists in fields other than psychiatry.

Since 1936, the Tennessee State Medical Association has been presenting courses in various medical subjects to the practitioners of that state. The course in psychiatry, September 1949 to July 1951, was the first attempt to present this subject on a statewide basis.

The state was divided into nine districts called circuits; in each one five larger cities were selected as teaching centers. Registrations were solicited in advance, and the instructor held a series of 10 meetings in each center. Attendance varied from 6 to 132. The registration fee was $10. A record of attendance for each registrant was kept and a certificate of completion was given to each doctor attending eight or more of the 10 lectures.

Lectures included the discussion of personality, employing psychoanalytic concepts and the development of the individual personality. The clinical discussions covered the reactive behavior disorders, the psychoneuroses, principles of psychosomatics and usually the problems of military psychiatry.

The didactic presentation was supplemented by a handbook of about 250 pages. The lectures were also supplemented by blackboard illustrations and particularly by sound films.

The program in each of the communities was publicized locally and the instructor was often called upon to give talks to lay groups. Emphasis was placed on presenting the material in as varied a form as possible, making use mainly of blackboard illustrations and sound films and relating the organized didactic presentation to these.

The Personnel Exchange

Faculty Vacancies

• The Creighton University School of Medicine requires the services of a full-time teacher in the area of PREVENTIVE MEDICINE and PUBLIC HEALTH. Requirements: M.D. and a M.P.H., or equivalent. Write details to Dr. F. G. Gillick, dean, Creighton University School of Medicine, Omaha, Neb.

• PHARMACOLOGIST: Combined department of physiology and pharmacology has opening for assistant or associate professor to take charge of teaching program in pharmacology. Time and facilities for research available. Requirements. M.D. or Ph.D. degree with at least 3 years of postgraduate academic experience. Direct inquiries to Dr. J. Raymond Johnson, director, department of physiology and pharmacology, Creighton University School of Medicine, Omaha, Neb.

•PEDIATRICIAN: Desired for half-time position as instructor for clinical clerkship program. Will assist in obtaining private practice opportunity for half-time not devoted to teaching Address: V-17.

• OPHTHALMOLOGIST: Residency available in ophthalmology at Vanderbilt University School of Medicine. For details address Dr. Henry Carroll Smith, 630 Doctors Building, Nashville 3, Tenn.

• OBSTETRICS—GYNECOLOGY· Professor and chairman of combined department, now under part-time professor; university desires to establish full-time department. Well-trained academically oriented man of approximately 40 years of age desired. Address. V-18.

• INTERNIST: Board certified or qualified desiring full-time academic career with excellent advancement opportunity. Should be interested primarily in clinical teaching and administration. Write Dr. Harold N. Neu, director of dept. of medicine, Creighton University, Omaha, Neb.

• PHARMACOLOGIST. Teaching and research position for individual qualified for assistant professor rank, with doctorate degree and at least a few years experience. Some time free for personal research with complete freedom of investigation in newly remodeled and equipped laboratory. Position to be filled between July 1 and Sept. 1, 1954. Salary range $6,000-7,000 Write to Dr. Frank C. Ferguson Jr., dept. of pharmacology, Union University, Albany Medical College, Albany 3, N. Y.

• FELLOWSHIP—CHILD PSYCHIATRY. Candidates must be M.D.'s with basic psychiatric or pediatric training. In addition to the clinical experience, the fellow in training will be encouraged to take certain academic courses which, if desired, can lead to acquisition of either a M.S. or Ph.D. degree. Write to Dr. Reynold A. Jensen, office of the medical director, University of Minnesota, University of Minnesota Hospitals, Minneapolis, Minn.

• CHILD PSYCHIATRIST: Joint appointment in department of pediatrics and psychiatry. Ample opportunities for research and teaching Rank and salary depend upon qualifications. Staff and service of department will be expanded considerably in near future. Write to Dr. Reynold A. Jensen, office of the medical director, University of Minnesota, University of Minnesota Hospitals, Minneapolis, Minn.

• RESEARCH DIRECTOR: To develop an active research program for the Saratoga Spa at Saratoga Springs, N. Y. Ph.D. with experience in physiology. Knowledge of biochemistry also useful. Permanent New York State Civil Service position (G-27 with salary of $6,562-7,992). Possible appointment to teaching staff of Albany Medical College. Write: Dr. Frank W. Reynolds, Medical Director.

• PHARMACOLOGY: The University of Alberta invites applications for the position of associate professor of pharmacology, in the department of physiology and pharmacology, effective September 1, 1954, at a salary within the range of $5,250-6,250 per annum (not including cost-of-living bonus now approximatly $300), depending on qualifications. Duties include lecture and laboratory courses for medical and dental students and a program of research work. Applications should include a recent photograph or snapshot, a curriculum vitae, and three references Address: Dean of Medicine, University of Alberta, Edmonton, Alberta, Can.

• BACTERIOLOGY. Applications are invited for position, department of bacteriology, Hebrew University-Hadassah Medical School, Jerusalem, Israel. Duties to commence October 1, 1954 Position vacancy in grade instructor, assistant or associate professor depending on qualifications For further information write Dr Joseph Hirsch, Executive Secretary, Medical Advisory Board, 9 East 89th St., New York 28, N. Y.

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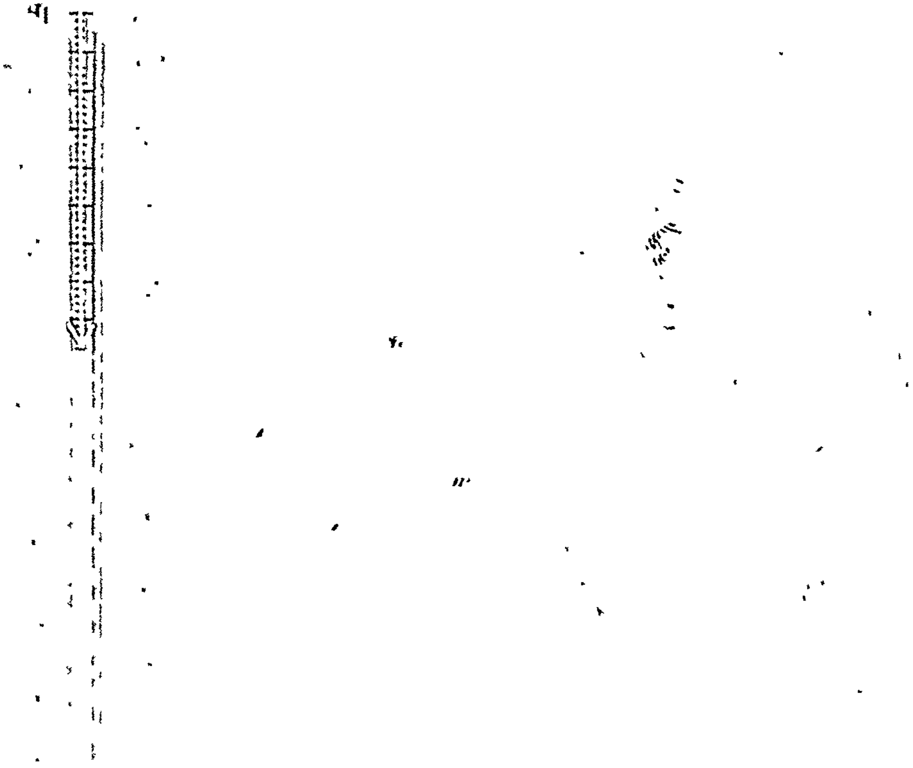

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[1] Moyer, J H, Miller, S I, and Ford, R V JAMA *152* 1121 (July 18) 1953

[2] Moyer, J H, Snyder, H B, Johnson, I, Mills, L C, and Miller, S I Am J M Sc *225* 379 (April) 1953

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Information for these columns should reach the Journal office, 185 N. Wabash Ave., Chicago 1, not later than the 10th of the month preceding publication.

Personnel Available

- Bacteriologist: Ph.D. Man. Age 30, married, veteran. Teaching experience in medical school. Publications and references. Sigma Xi. Would like teaching-research position in medical bacteriology, virology, or immunology. Prefer location in west or southwest section of country but would consider other location. Available July, 1954. Address: A-96.

- Pharmacologist-Physiologist: Male, Ph.D. Broad teaching experience at both undergraduate and graduate levels; has organized course in medical pharmacology. Active in research, including clinical applications. Publications. Member of professional societies. Available on short notice. Address: A-97.

- Physiologist: M.D., M.A. chemistry, diplomate. 27 months of residencies. 5 years of practice. 3 years of research and teaching. Research papers in pulmonary physiology and biophysics. Desires teaching position with opportunity for research. Address: A-98.

- Surgeon: M.D., L.R.C.S. Foreign-born; naturalized. Experience includes 2 years postgraduate work in surgery and 6 years approved residency. Desires teaching-research position in medical school. Available July 1954. Address: A-99.

- Pharmacologist: Ph.D., associate professor in large medical school, fully qualified for departmental administration, desires change to responsible position. 14 years medical teaching, including organization and presentation of all phases of pharmacology courses. Active in research and in direction of graduate activities. Member of pertinent societies. Available Sept. 1954. Address: A-100.

- Bacteriologist: Ph.D., desires teaching and/or research position. Experience in teaching, research and consulting. Successful preparation of nurses, pharmacists and premedical students. At present, assistant professor. Available on short notice. Address: A-101.

- Instructor and/or Research Assistant: M.D. Japanese; American born, Age, 40. Reads, writes and speaks English fluently. Experience: 1 year residency in otorhinolaryngology; and 3 years residency in surgery at the Kyoto Prefectural Hosp. 3 years as medical lab technician at the U. S. Army Hosp. in Kyoto, Japan. 4 years as chief of E.E.N.T. department, Kushida Hosp., Osaka, Japan. Engaged in private practice since 1952. Address: A-102.

- Physiologist: M.D., associate professor, man, age 35, married. Swiss. Research for 7 years in respiration and circulation in Switzerland, U. S., England and Germany. 7 years teaching experience. Background in math, physics and chemistry. Prefers position *in research or teaching for about 3* years. Publications and references. Available in autumn 1954. Address: A-103.

- Microbiologist: Desires graduate research fellowship or assistantship permitting study toward Ph.D. degree. A.B., M.S. in bacteriology plus 2 years of graduate study toward Ph.D. completed. Research experience in therapy of parasitic infections and bacterial physiology. Numerous publications and member of Sigma Xi. Presently assistant professor of microbiology in small college. Available in July 1954. Address: A-104.

- Biochemist-Physiologist: Ph.D., age 27, 3 years teaching experience, research on cellular and blood thymo-nucleic acids, relationship to stress and tumor activity. Interested in working toward M.D. degree. Address: A-105.

- Anatomist: Ph.D., 33 years old. Has taught in recognized medical school. At present executive position in pharmaceutical industry. Wishes to return to academic profession. Has taught all fields of anatomy; interested in research. References; publications. Address: A-106.

- Pharmacologist: Male, age 33. Ph.D. Minors: biochemistry and physiology. 1 year graduate teaching and research assistant. Teaching and research position with medical, dental or pharmacy school pharmacology department desired. Available immediately. Address: A-107.

- *Pharmocologist: M.D., Ph.D.*, married. 5 years teaching experience, active in research; publications. Desires position teaching with research or research only. Address: A-108.

- Internist: Man. Age 42. M.D., Ph.D., F.A.C.P. More than 15 years experience in teaching, research and top-level administrative responsibility. Would like permanent position involving some teaching and/or clinical investigation. Address: A-109.

- Pathologist: M.D., 43, board certified in pathologic anatomy and clinical pathology. 17 years well-rounded experience in large hospital laboratory, medical school teaching and residency programs. Many scientific publications. Special interests include tropical medicine and hematology. Seeks position in foreign country, preferably in tropics. Address: *A-121.*

• ANATOMIST: Ph.D. in medical science, major in anatomy, 1954. Married. Age 31. Would like permanent teaching-research position at medical school or research institute. Extensive background in preclinical courses including pathology. 4 years teaching experience as fellow in histology and embryology in medical school. Keen interest in histochemistry and endocrinology. References. Available June 1, 1954. Address: A-110.

• SURGEON: 38, married, veteran. Diplomate of the American Board of Surgery. Training in general surgery with fellowship in tumor surgery. Background of research in biochemistry. Desires teaching position with opportunity for research; U. S. or foreign. Available July 1. Address: A-111.

• ORTHOPEDIC SURGEON: 36; certified; university trained; M.S. (orthopedic surgery) experience in traumatic surgery and rehabilitation of severely disabled. Seeks association with diplomate and university hospital affiliation. Address: A-112.

• PHYSIOLOGIST—MICROBIOLOGIST: Man, Ph.D., 30, veteran. 7 years experience in teaching physiology, microbiology and histology, medical school level. Member of scientific societies. Desires teaching fellowship with opportunity to work for M.D. in return for tuition and stipend. Prefer Canada or U. S. Goal—radiology. Available in fall. Address A-113.

• PHARMACOLOGIST-PHYSIOLOGIST: M.S., Zoology; Ph.D. expected June 1954. Experienced in pharmaceutical research, teaching experience in pharmacy during army service. Desires research and teaching position in physiology and pharmacology. Special interest in endocrinology. Member scientific societies, Sigma Xi. Publications; references. Address: A-114.

• M.D., M.P.H.; Diplomate of Board of Public Health and Preventive Medicine desires to head department of PUBLIC HEALTH and PREVENTIVE MEDICINE in medical school. 14 years varied experience in field combined with teaching at undergraduate and graduate levels. Capable of integrating this subject with rest of medical school curriculum. Address: A-115.

• INTERNIST-CARDIOLOGIST: M.D., 35, family. 7 years of university hospital training, including 4 years in cardiac laboratory. 30 publications. Certified in subspecialty. Now assistant professor of medicine. Seeking change of location. Prefers full-time permanent academic position. Address: A-116.

• ANATOMIST: 28, Ph.D. in anatomy. Desires teaching position at medical, dental or pharmacy school. Will consider teaching gross anatomy, histology, embryology or neuroanatomy. Chief interest is neuroanatomy. Continental U. S. school only. Available now. Address: A-122.

• PHYSIOLOGIST-ENDOCRINOLOGISTS Man, 31, Ph.D. 5 years experience in teaching and research at Harvard University. Seeking full-time academic position. Extensive experience in physiology, general endocrinology, endocrinology of reproduction, human heredity, research methodology, histology and zoological sciences. Will accept administrative duties and responsibilities. Salary secondary to good future. Address A-117.

• HISTOLOGIST-HISTOCHEMIST: Ph.D. Harvard; young man, teaching and research experience. Publications; member of scientific organizations. Interested in obtaining teaching or research position in eastern U. S. Address: A-118.

• LABORATORY SUPERVISOR: Administrative and/or teaching position in medical technology. 10 years supervisory experience. B.S. in bacteriology. Graduate credits in biochemistry, histology and pathology. Laboratory officer, Sanitary Corps, Medical Department, U. S. Army 4 years (captain). Publications; references. Seeks stimulating position, preferably with academic affiliation. Address: A-119.

• SURGEON: 32; American Board of Surgery certified. Married. Interested in academic career; category 4; prefer job with limited private practice privileges, but will consider any full-time position without private practice allowances. Address: A-120.

• BACTERIOLOGIST: Male, 39, M.Sc., married. 5 years teaching experience in medical bacteriology and general microbiology. 12 years practical and administrative experience in public health laboratories. Desires teaching position with research opportunities or administrative positon in public health laboratory. Presently assistant professor of bacteriology. Available autumn 1954. Address: A-123.

• BIOCHEMIST-RADIOCHEMIST: Ph.D., 1952. Major in physical chemistry, minor in biochemistry. Experience in sterols, organic reacton mechanisms, small animal metabolism and radiocarbon dating. Presently engaged in research on mineral metabolism in man. Publications. Desires teaching or research position in applications of isotopes or physical chemistry to medical problems. Address: A-124.

• INTERNIST: M.D., practicing physician, consultant in medicine and encrocrinology, interested in university position developing research study to determine the potential of measuring taste as it adapts to and reflects immediate physiologic and nutritional needs. Hospital and medical school teaching experience. Certified Am. Bd. of Internal Medicine; Am. Coll. Physicians. Address: A-125.

• BIOCHEMIST: Biochemistry-Internal medicine Ph.D., M.D., 40. Interested in medical school appointment for teaching and research. Experience in teaching, research and private practice. Particularly interested in clinical correlation of basic sciences. Address: A-126.

• PHYSIOLOGIST: Ph.D., male, 37, family. Experience in research and teaching mammalian physiology. Research emphasis in neurophysiology and visual physiology. Experienced in using electrophysiological techniques. Acquainted with problems and techniques of electromyography, especially as applied to human studies. Publications. References. Desires opportunity for research with or without teaching responsibilities. *Available. Address:* A-127.

Human Genetics and Medical Education

C. NASH HERNDON

IN CONNECTION WITH its sixth annual meeting, the American Society of Human Genetics sponsored a symposium on Human Genetics and Medical Education in Boston on December 28, 1953. Speakers on the symposium, which was organized by Dr. Madge T. Macklin, included Drs. Louis K. Diamond, Harold F. Falls, F. Clarke Fraser, C. Nash Herndon, James V. Neel and Lawrence H. Snyder. The teaching of genetics was considered both in relation to the medical curriculum and in the training of house officers and in postgraduate courses of medical instruction. The paper by Dr. Herndon, published on the following pages, dealing with the current efforts of medical schools to provide instruction in human genetics, was thought to be of especial interest to readers of The Journal of MEDICAL EDUCATION.

GENETICS, being contemporary with radiology, must be considered a relatively young science when compared with most basic medical sciences. Unlike radiology, however, a number of years passed after the rediscovery of Mendel's principles in 1900 before genetics was seriously applied to medical problems. The many practical applications of genetic knowledge that can be useful in medical practice have been discussed by several writers and need not be repeated here. Our immediate purpose is to examine the status that genetics has acquired in the medical curriculum and attempt to evaluate its logical place in undergraduate medical education.

For generations outstanding teachers of medicine have emphasized the hereditary nature of certain afflictions, but the teaching of genetics as a science offering predictive information in a previously empiric field did not become established in medical curricula until the mid-1930's. Macklin in 1932,[1] Snyder in 1933,[2] and Allan in 1936,[3] were pioneer teachers in this field, and Snyder in 1951,[4] has reviewed progress in human genetics as a scientific discipline, pointing out the rapid progress made during the last two decades.

In 1946 Robertson and Haley[5] obtained information concerning the extent of teaching of genetics in schools

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Dr. Herndon is associate professor of medical genetics, Bowman Gray School of Medicine of Wake Forest College of medicine by means of a questionnaire sent to the deans of all medical schools in the United States and Canada. Of 84 questionnaires sent, 60 were returned. A formal course in medical genetics was offered at seven schools. In four schools this was given in the first year by an instructor in anatomy, while in three it was given in the clinical years in the department of medicine. The class hours assigned ranged from seven to 30, with the average being 15. In addition, 25 schools reported that some lectures on genetics were given as part of various courses. At 15 schools these lectures were given in the course in histology and embryology, at five in anatomy, at four in other preclinical courses and at three schools the lectures were in the clinical years. Only 18 questionnaires specified the number of hours assigned for genetic material in other courses, the range being from two to 13 hours, with an average of five hours.

In an effort to obtain a clearer picture of the current situation, a questionnaire requesting information concerning instruction in medical genetics was sent during the fall of 1953 to the 87 schools of medicine in the United States and Canada. Replies were received from 81 schools. The tabulation of replies is as follows:

Question:

Is any instruction in medical genetics given during the regular course for the M.D. degree?

Replies:

Yes	48	55.2%
No	33	37.9%
Elective	1	1.2%
No reply	5	5.7%
Total	87	

A number of colleges gave qualified answers, and this partition is probably not strictly accurate. Such replies as "only sporadically" or "only as subject happens to arise in clinical departments" were all classed as "no." A reply was classified as "yes" only if it included information indicating some consistent attention to underlying principles. Even with these qualifications, it seems apparent that there has been a significant increase in the attention given to genetics in the medical curriculum since the study of Robertson and Haley in 1946.

Question:

How many class hours are devoted to genetics?

Replies:

2-5 hours	26
6-10 hours	13
11-15 hours	7
More than 20 hours	2
Total	48

The classification concerning number of class hours of instruction also may not be strictly accurate. In a number of replies the figure given was specified as an estimate only. On some questionnaires this question was not answered specifically, but information was appended stating, for example, that lectures on genetic principles were given in hematology in connection with blood group instruction or that "several hours" were given to general principles in embryology or pediatrics. All replies of this sort were classed in the two-to-five-hour group, although in several replies the amount of material described would suggest a larger assignment of time.

Question:

Is genetics a separate course or is instruction integrated with other courses?

Replies:

Separate course	6
Integrated	42
Total	48

Courses were classified as separate only if listed as being a regularly scheduled course in medical genetics separate from all other courses. Six universities listed such courses, with the range of assigned class hours varying from six hours to 24 hours, with an average of 13.5 class hours.

Question:

If instruction is integrated with other courses, in what departments or courses is it included?

Replies:

(42 colleges)	
Anatomy, Histology, Embryology	24
Pathology, Microbiology	7
Physiology, Biochemistry	4
Pediatrics	13
Medicine, Hematology	13
Preventive Medicine	7
Obstetrics - Gynecology	5
Psychiatry and Neurology	5
Total	78

It will be noted that among the 42 schools reporting integrated instruction, several reported that genetic material was included in more than one course, giving a total of 78 for the above table. The majority of schools reporting instruction in more than one department noted that part was given in a preclinical course and part in the clinical years, for example, three hours in embryology and two hours in pediatrics. We have very little information as to whether current practice really represents an active opinion on the question, but the instruction as given is about evenly divided between the preclinical and clinical years.

Additional Opinion

Additional comments were added to nearly half of the questionnaires, indicating considerable interest in the topic and a rather wide range of opinion. These comments do not lend themselves to analysis, but a few quotations may be of some interest. One dean commented, "Although the type of program we have here is better than nothing, it neither represents our own conception of the kind of teaching that is desirable nor does it afford the student an opportunity to actually become familiar with the theory, techniques and applications that give genetics and human genetics integrity as independent disciplines. It seems almost unnecessary to add that the barrier to achieving our concepts is largely monetary and to a certain extent related to a lack of appropriate man power." From another college classified above as teaching no genetics, the comment was, "We are at this moment discussing the introduction of organized instruction in genetics into our curriculum." A Canadian school replied, "There is a curriculum revision in progress at the moment and time may be allotted to genetics." On the other hand, a large Western school reported, "According to the chairman of our curriculum committee, the subject has never been discussed by the committee with the view of possible inclusion in the curriculum." The common dilemma of the overcrowded medical curriculum and the lack of qualified teachers is pointed up by a reply stating, "No, I think it would be fine, but by whom and when?"

Although the question was not included in the questionnaire, four schools mentioned genetics as a subject required for medical school admission, suggesting the opinion that genetics should properly be taught at the premedical level. This is somewhat in conflict with the general trend to encourage a broader liberal arts foundation rather than more specialized scientific courses. Records kept by the writer on the number of entering students at the Bowman Gray School of Medicine who have had courses in genetics in undergraduate schools indicate a rise from about 15 percent in 1943 to more than 50 percent in recent years. If all medical students had received such training, more advanced material could be covered with less expenditure of time. It is of interest that at Ohio State University the class is divided into two sections on the basis of premedical genetic instruction, with elementary principles discussed with those with no previous training and more advanced material being given to those who have had general genetics.

From the information available, it would seem safe to conclude that responsible administrative officers in most medical schools on this continent feel that some knowledge of genetics is desirable in candidates for the M.D. degree. Although some administrators feel that all required genetic knowledge should be acquired in the premedical years, the majority seem to feel that the school of medicine has a responsibility to offer material designed to bridge the rather wide gap between laboratory genetics and medical practice. It thus seems appropriate to consider questions of possible course content and the relation of genetics to other material in the curriculum.

To illustrate certain points in this connection, the course in medical genetics offered at the Bowman Gray School of Medicine will be described, not because we feel that this course is in any way a model, but because we have been forced to meet certain problems that may be of interest to others. This course was begun in 1942 under the direction of Dr. William Allan, with certain suggestions as to lecture content being contributed by Dr. Paul David and with the enthusiastic support of Dean C. C. Carpenter. It was first thought that medical genetics should be a clinical subject, and 20 lecture-clinic hours were therefore assigned in the senior year. The department of medical genetics was administratively attached to the department of internal medicine.

The original teaching called for brief introductory lectures concerning cytologic background material, followed by clinical presentation of hereditary diseases by systems with description of single gene mechanisms and other genetic principles explained in detail when they arose in connection with specific disease entities. Although this plan looked excellent on paper, in practice it failed to produce the desired result. Although student interest was temporarily aroused by the presentation of clinical cases, it sank to a low ebb during discussion of basic principles. Students completing the course had distressingly vague ideas of genetic principles and their application.

After investigation, it was concluded that the poor result was due to three factors: (1) In the fourth year the student is primarily concerned with acquiring skills in diagnosis and treatment, and he finds it difficult to adjust his thinking to include the basic facts of a whole new branch of science. (2) Most important, the course material did not correlate well with other courses being given during the same quarter. (3) There was insufficient internal coherence with regard to basic genetic principles.

Revised Theories

As soon as these facts were ascertained, our teaching theories were thoroughly revised. It seemed best to break the course into two parts, the first half to concentrate on a presentation of basic principles of genetics, using hereditary diseases only as illustrations of principles. The second half was designed as clinical instruction, covering the outstanding hereditary diseases by systems and presupposing a knowledge of principles. To effect proper correlation with other course material, it seemed best to place the presentation of principles in the second year and the clinical material in the third year. Progressive rearrangements of the schedule were effected during the next three years until it seemed that the optimum position in relation to other courses was achieved.

Administratively, medical genetics was transferred from the department of internal medicine to the department of preventive medicine. These changes were facilitated by the fact that our entire curriculum was in process of revision with emphasis on interdepartmental correlation. The total effect of this curriculum revision has been described and evaluated by Carpenter.[6]

At present the course in basic principles consists of 12 lecture hours during the first quarter of the second year with pathology, physiology and microbiology being presented at the same time. The student is thus introduced to all types of causative agents of disease simultaneously, and studies their effects upon structure and function of the body. An effort is made to schedule lecture material in all courses given during the quarter so that related material will tie the various courses together. For example, the student may spend the morning studying the pathology of a given condition in the laboratory and find that the same disease may be used that afternoon to illustrate recessive gene actions. We feel that correlation of genetics with other courses is quite important, and that students should be introduced simultaneously to genes, germs and other agents of disease.

Basic principles discussed include a brief description of cytologic background material, mutation, single gene substitutions with typical dominant, recessive and sex-linked pedigrees, penetrance and expressivity of genes, special mechanisms (holandric, partial sex-linked and sex-influenced genes), multiple factors and linkage. Elementary principles of population genetics are discussed briefly, with emphasis on gene frequency and isolate problems. In addition, two hours on blood groups and medicolegal applications are given later in the second year as part of the course in clinical microscopy.

The second half of the course is called "Hereditary Diseases," and is given during the third year. The course of 12 hours is given twice a year, reaching one-half of the class with each series, these being the sections assigned to internal medicine and pediatrics at the time. The major hereditary diseases are covered by systems, with presentation of illustrative cases as they become available on the hospital wards. Mimeographed outlines are distributed which attempt to summarize modes of inheritance and other genetic data. General topics covered include malformations, diseases of the eye, mental defect, neurologic diseases, metabolic diseases, blood dyscrasias, skeletal abnormalities, skin diseases and constitutional diseases. Attention is repeatedly directed to the applications of genetics to preventive medicine, emphasizing the utilization of family history knowledge in early diagnosis, limitation of disability and prognosis in many varied clinical situations. With regard to congenital malformations and the more severe diseases of infancy and childhood, emphasis is placed on proper advice to be given to parents concerning possible future children. The interactions of hereditary and environmental factors are constantly stressed.

In addition to the two formal courses, the medical geneticist is frequently invited to attend clinics or case presentations initiated by other departments to discuss briefly any special genetic factors of significance. This cooperation and correlation of effort between departments is encouraged at all levels by the administration.

We feel that our present method of teaching has proved to be rather satisfactory in accomplishing its purpose. We have no intention of making medical geneticists of our students. Our aim is to make them aware of genetic factors in disease and to teach them to utilize the available information as a useful adjunct to proper clinical handling of patients.

Place for Genetics

As is indicated by the questionnaire replies described above, there is no unanimity at present as to where genetic instruction really belongs in the medical curriculum. Several suggestions on this point have been advanced. One of the more interesting ideas was described briefly by Currier McEwen,[7] dean of the New York College of Medicine, at a meeting of the American Society of Human Genetics in 1952, and discussed in more detail by Sheehan and Harman.[8] A proposal is made to establish a department or institute of human biology, which would be centered around the existing department of anatomy, but including members from other departments. This would include five sections: (1) genetics, (2) growth, (3) constitution, (4) bodily adjustments and (5) behavior.

This proposal would require a considerable shift in viewpoint of the approach of the student to preclinical subjects and obvious reorganization in the first-year work. Its objective would be "the development in the student of a concept of man as a total organism, having definite inherited attributes, with capacities for growth, development and deterioration and subject to innumerable environmental influences — physical, psychological and sociological."[9] Cummins[10] has also emphasized the advantages of approaching medical education from the viewpoint of human biology.

A somewhat similar line of reasoning concerning the emphasis on man as a total organism has led others to suggest that medical genetics should be included in the division of preventive medicine. This suggestion is somewhat more clinically oriented, and rests on the suggestion that the individual patient must be considered in relation to both his family background and his sociologic environment, with proper correlation of genetic, physical, psychological and sociological factors in the broad concept of health, both as applied to the individual and as applied to the community.[11]

Principles

It is the opinion of the writer that no one method of organization or of approach to teaching exists at present that will be entirely suitable in all situations. Obvious difficulties include the scarcity of medical instructors with adequate training in genetics, the already overloaded nature of the curriculum and the chronic lack of teaching funds. General principles that seem to have worked well in practice include the following:

1. Instruction in basic principles of human genetics should be given

during the preclinical years, with due regard to correlation with instruction in other basic sciences.

2. Clinical applications of medical genetics should be stressed during the third year, with emphasis upon the concepts of preventive medicine.

3. As genetic principles have application to so many phases of medicine, correlation with both preclinical and clinical departments is essential.

4. It would seem that the development in the student of a point of view or attitude, that of considering man as an integrated organism with due regard to genetic, physical, mental and social factors, is more important than simply presenting genetics as an isolated body of knowledge.

The concepts enumerated above may well be incomplete, and some revision will doubtless be required in specific situations. Each school of medicine will need to evaluate the question of genetic teaching in relation to its own unique requirements and opportunities.

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Preprofessional and Professional Education in Medicine

EDWARD L. TURNER

As knowledge accumulates with ever-accelerating rapidity, medical education has begun to undergo a great deal of "face lifting" and interesting experimentation is going on in many of our medical schools. To adequately prepare students for the dynamic activities of medical training today there is need for considerable rethinking in regard to premedical education. Our new tools and technologies have brought about social changes which have been shifting all aspects of life, including the diagnosis and treatment of disease and the very nature of medical practice. In spite of the tremendous implications of new technologies they are, in the field of education, sometimes stubbornly resisted emotionally, with the result that we cling to obsolete standards and conventions of the education of the past, either fearing or failing to follow the logic of what may today be in man's better interests.

Man has need for insight and intellectual power to utilize the entire body of culture and civilization. He cannot turn away either from past knowledge or from present reality. Effective use of knowledge today must be in relationship with sociobiological objectives. The right kind of utilization of past knowledge integrated effectively with new knowledge and the reality of today gives to human life content, direction and some sense of security.

Sir Lionel Whitby, in his presidential address before the First World Conference on Medical Education in London last August, stated that, "The first challenge which has come to the fore in the second half of the 20th century is not confined to medical education but is levelled at education itself, whatever calling or profession a man or woman is to take up." Regardless of what calling is being considered, challenges lie in three directions in education: (1) to the teachers, (2) to those they teach and (3) to what they teach. Where there is failure or inadequacy in any of these, the results of educational exposure may be disappointing.

In trying to analyze some of the problems and needs in premedical and medical education it might be worthwhile to ask ourselves "What is education?" Sir Richard Livingstone writes that an education "should prepare us, either by a general or a vocational training, to earn our bread; it should give us some understanding of the universe and of men; and it should help us to become fully developed human beings." He points out that the first aim, that of breadwin-

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ning, is the least likely to be overlooked, and that the latter two aims of making intelligent citizens of the world and good human beings are the most important to us as men, but less obvious, more difficult and more readily neglected.

Education should be a preparation for "feeling at home and living intelligently on the stage where we find ourselves." Livingstone further indicated that we humans need instruction as to how to behave on this stage and that there are four points of good behavior that should be kept in mind. One of these is the necessity of learning how to express ourselves intelligently to others. The second is to know how to read and understand a book. The third is to think clearly and logically, and the fourth is to have the insight that comes from sensitiveness to supplement and correct the knowledge which comes from hard thinking.

A Simple Philosophy

Furthermore, Livingstone points out that an education which leaves individuals without a philosophy of life is as incomplete as one that leaves individuals unable to think or express their thoughts. He indicates that there is a very simple philosophy which gives standards of value and judgment applicable to all spheres of human activity which might be called the *philosophy of the first-rate.* Regardless of race or creed, people in all fields of life will admit to the philosophy of the first-rate. Certainly an educated individual should know the first-rate in the most important human activities.

We know the first-rate by seeing it, by experiencing it and through contact with it. We know the first-rate in food by tasting it, the first-rate in literature by reading it, the first-rate business by dealing with it and first-rate medicine through contact with those who know it and practice it in first-rate fashion. Education should be the midwife that brings this philosophy of the first-rate to birth and that indicates its fruitfulness to those who accept it as well as to those they serve, regardless of the field of human endeavor.

Education and Medicine

Thus it would seem well worthwhile in considering matters of preprofessional and professional education to think of them first in terms of the philosophy of the first-rate. This should be recognized as an ever-current challenge to education itself if such a philosophy is to be gained by students during the process of their preprofessional and professional exposure. Furthermore, if the value of the philosophy of the first-rate is recognized, it must be thought of in terms of first-rate students, first-rate teachers, first-rate facilities and first-rate opportunities in educational experience.

Preprofessional education for medicine today offers increasingly difficult challenges. Such rapid strides have been made during the first half of the current century that the very nature of medical practice has changed. Advances in chemistry, physics and biology have given much clearer insight into the mechanisms of biological activity and have necessitated greater understanding of these sciences on the part of individuals contemplating the study of medicine.

Do we prepare our students in their preprofessional years so that they have a reasonable grasp of the principles behind these sciences which they must use? How much chemistry, how much physics, how much biology, and in each instance what kind, are questions of real concern today. With the increased knowledge available in each of these fields today, preprofessional students could spend their entire period of preparatory study in these areas alone if careful evaluation and guidance is not given to what they need, why they need it and how it is to be utilized.

The specialists in these scientific fields are frequently inclined to belittle any effort to design special types of courses for individuals needing basic knowledge, but not intending to specialize in their fields. Here is where, through lack of knowledge and perspective as to the needs in medicine, much stilted and unproductive teaching can be done and a great deal of time wasted on the part of both students and teachers in the preprofessional period. This whole area needs careful analysis and review with material curriculum readjustments eventually resulting from such studies.

The increasing scientific specialization of recent years has crowded the preprofessional curriculum with so much science that there has been an increasing reaction towards the poverty of mind frequently seen in the pure science student and the medical student due to lack of general education in such fields as the humanities, literature, history, language and the fine arts. The finest of scientists would be of little value as a physician if he did not understand a bit about the world in which his patients lived and be able to appreciate fully the multitude of sociological and economic factors involved in practically all situations. Patients are human beings and if the physician of the future is to approach them and understand them as such he must have an appreciation of civilized values aside from his depth of scientific knowledge. During recent years the study of man in his relation to his environment—human ecology—has resulted in a general awakening and growing consciousness of the overall importance and necessity of individuals entering medical study being well grounded in this field.

Thus it appears that there is need for much more thought to be given to intelligent background planning of education in preprofessional areas. There is no need nor any desire to stereotype preprofessional training. There is need, however, for discarding some of the traditional concepts of what constitutes an education that was satisfactory prior to the 20th century, and begin to think of some of the things needed today.

The Remedy

How can the preprofessional years be more effectively spent to meet the requirements of today's professional challenges? This is where cooperative planning on the part of professional faculties with preprofessional faculties could yield large and effective dividends. It would mean a lot of work, the discard of a lot of tradition and the development of materially modified curricula. But for what do we have our huge investment in higher educational institutions unless they can recognize these new problems and effectively set to work to solve them? What is taught and how it is taught in preprofessional and professional years must receive constant attention and revision if it is to avoid obsolescence.

If what is taught and how it is taught is to be effective, the challenge to those who teach should be one that is eternally fascinating. Imagination is not allowed the freedom it should have in this area. Methods of presentation can be as important as the material being presented. In today's research-minded academic world, too frequently teaching has assumed a minor role, particularly when promotion and financial reward have tended to favor the investigator rather than the teacher.

The ideal faculty member, whether preprofessional or professional, is the one who combines effective talents in both teaching and research. Many such individuals exist and they become the dynamic stimulators that light the spark in their students. Today we do need re-emphasis on good teaching and on effectively rewarding good teachers as well as good investigators. A good science teacher or a good teacher in any field can stimulate an intense interest in the history of his subject with its social and economic implications as well as in the accumulation of current knowledge of the field in question. This in itself tends to give perspective to education in any area.

The Student

The question of students has been left to the last here although perhaps it should have come first, for educational programs of any kind with no one to learn from them would be of little merit. On the other hand, without a curriculum that is of real value or teachers who have potentialities, there would be equally small merit in having students.

Although many students know at the time they go to college or university of their desire to prepare for entrance to a medical school, a goodly number do not reach such a decision until well embarked on their college career. Thoroughly good preprofessional advising can do much to direct students either toward or away from a professional career if the advisors are fully aware of the qualifications needed by students planning to study medicine. What do we as physicians and medical educators believe to be the qualities of character and proficiency desirable in potential medical students and future physicians? Here is another area where closer cooperation between preprofessional and professional groups in education can pay real dividends.

Because of the very nature of medicine it is important that potential candidates for the profession be intelligent, intellectual, possess integrity beyond question, be human and sympathetic. They should be individuals who have the capacity of developing a genuine love for their profession and an understanding of their fellow human beings with all of their weaknesses, joys and sorrows.

Good student selection and good advising take time. They require keen insight and understanding of young people. Properly conducted, they are expensive because of the caliber of individuals needed to conduct them and the time factor involved in good selection and advising. On the other hand, there seems to be no function of a college or university more important than that of aiding young people—the students seeking their education—find themselves. This is where many of our institutions of higher education fall down pathetically and where real effort should again pay handsome dividends in avoiding many of the wastages that go with college and university life today.

There is an old Chinese proverb

to the effect that "You cannot carve rotten wood." True enough, if the basic potentialities are not present efforts to prepare youth for professional training will be of no avail. On the other hand, a piece of driftwood carefully cleaned and polished or carved into an attractive and useful item by one who can recognize the inherent beauty in it may become a thing of beauty and a joy forever. Careful selection, sincere and intelligent guidance and exposure to the first-rate in opportunities from the standpoint of curriculum and teachers cannot help but bring to medical schools those students who have developed a basic philosophy of the first-rate that should call forth the best from each and every medical faculty in the nation.

If we as medical educators have our sights set on the philosophy of the first-rate and constantly work towards its achievement there will be continued effort to find ways and means of doing our task better. It is the philosophy which, if possessed by those of us who teach and practice and passed on to our students, can guarantee for medicine and for those whom medicine serves continued striving toward the best in health, happiness and general welfare—and the progress that current knowledge makes possible.

Medical School Enrollments from 1945 to 1955

JOHN M. STALNAKER *and* ROSS A. DYKMAN

THE *Journal* of the American Medical Association in its Educational Number has come to be the authoritative source for figures on medical school enrollment. It does not give figures for a school until the school is approved. The following table has been prepared to give total enrollments over the past 10 years. The grand totals are a composite of figures given by the AMA for the approved schools, and figures of the Association of American Medical Colleges on schools which are in the process of being approved. The records of the AAMC cover all medical schools whether or not they have been officially approved.

The University of Washington, for example, did not enter tabulations reported in the AMA *Journal* until 1949-50. Prior to this, the school had enrolled three freshman classes, two sophomore classes and one junior class. The section of the enclosed table entitled "Schools in Transition or New Schools" gives the figures omitted from the published report.

As another example, consider North Carolina. This school has been in operation as an approved two-year school for many years, and in 1952-53 initiated a four-year program. In the table they are entered as both a two-year school and as a school in transition. Their freshman and sophomore classes are counted in the two-year school section and their junior class in the new school section. North Carolina should appear in the Educational Number of the AMA *Journal* for the first time as a four-year school in the 1953-54 edition.

The data for 1953-54 and 1954-55 shown below the dotted line are based on estimates. The number of freshmen for 1953-54 was obtained from enrollment cards, and the number of freshmen for 1954-55 was based on figures supplied by the medical schools for the "Admission Requirements" booklet. Total enrollment for both these years is estimated.

Medical education has expanded considerably since 1945. There will be approximately 4,900 more students in medical schools in 1954-55 than in 1945. This increase is especially significant when evaluated in terms of the tremendous cost of expansion and the difficulties involved in obtaining qualified teachers.

During the period covered by the table, three schools have opened: University of Washington, University of California at Los Angeles and Miami; two have expanded their programs to give four years of education: Alabama and North Carolina; and one additional school has gained approval: Chicago Medical. Further

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Mr. Stalnaker is the director of studies and Mr. Dykman is a research associate of the Association of American Medical Colleges

Medical School Enrollments 1945-1955

	Approved Two Year Schools			Approved Four-Year Schools			Schools in Transition and New Schools			Grand Totals		
Year	Number of schools	Fresh men	All four classes	Number of schools	Fresh-men	All four classes	Number of schools	Fresh-men	All four classes	Number of schools	Fresh-men	All four classes
45-46	8	264	503	69	5,796	22,691	2[a]	75	292	78	6,135	23,486
46-47	7	249	429	70	6,315	23,471	2[b]	125	317	79	6,689	24,217
47-48	7	274	491	70	6,213	22,248	2[b]	120	346	79	6,607	23,085
48-49	7	279	524	71	6,409	23,146	1[c]	48	137	79	6,736	23,807
49-50	7	283	556	72	6,759	24,547	—	—	—	79	7,042	25,103
50-51	7	289	558	72	6,893	25,633	—	—	—	79	7,182	26,191
51-52	7	288	561	72	7,153	26,515	1[d]	28	28	80	7,469	27,104
52-53	7	285	553	72	7,140	27,135	3[e]	68	140	81	7,493	27,828
53-54	6	231	445	73	7,172	27,494	2[f]	75	161	81	7,478	28,100
54-55	6	231	445	74	7,214	27,850	1[g]	44	105	81	7,489	28,400
Totals		2,673	5,065		67,064	250,730		583	1,526		70,320	257,321

FOOTNOTES TO TABLE

All footnotes refer to schools not listed in totals published in the Educational Number of the *Journal* of the AMA.

[a] *Alabama* appears in two columns this year, once as an approved two-year school and once as a four-year school because it is in transition to a four-year school, but there is no duplication of students in the total given. The other school not listed by the AMA at this time is *Chicago Medical.*

[b] *Chicago Medical* and *University of Washington* were not approved at this time.

[c] *Chicago Medical* was approved in 1948-49 leaving only the *University of Washington* in this column.

[d] *U.C.L.A.* enrolled its first class this year but is not eligible for approval.

[e] *North Carolina* appears in two columns this year, once as a two-year school and once as a four-year school, but again there is no duplication of students in the totals. Both *Miami* and *U.C.L.A.* are enrolling students this year but neither is approved.

[f] *North Carolina* has been approved as a four-year school this year. This leaves *Miami* and *U.C.L.A.* still to be approved.

[g] *U.C.L.A.* will be eligible for approval this year. This leaves *Miami* which will be eligible for approval in 1955-56.

expansion is seen in the near future: Missouri and West Virginia are considering changing from two- to four-year schools and plans for opening new schools are being developed by the University of Florida and Yeshiva University (Albert Einstein College of Medicine).

A Comparative Study of Student Performance in Medical Schools Using National Board Examinations

JOHN P. HUBBARD and JOHN T. COWLES

EXAMINATIONS ARE customarily used to measure the individual student, to find out if the student has been successful in acquiring knowledge, judgment and skills in his learning experience. Examinations can, however, have other values. When the same examination is used in a number of schools, the performance of the students in one school may be compared with that of students in other schools, thereby reflecting group differences. The product then serves as a measure of the process.

The examinations of the National Board of Medical Examiners are now being used in a sufficient number of medical schools throughout the United States to provide the basis for a comparative study[*] of student performance in a representative group of schools. During the academic year 1952-53 there were 16 schools in which Part I examinations[*] were either required for all students or taken on an elective basis by virtually the entire class; similarly there were 15 using the Part II examinations.[**] The medical schools included in this group are listed in Table I. The total number of students taking the examinations in these schools comprised a total of approximately 1,500 in Part I and a total of 1,366 in Part II.

Validity and Reliability

Before sound conclusions can be drawn from the use of examinations, confidence in their validity and reliability must be established. A previous article in this Journal[†] reported in considerable detail the results of a four-year study of the adequacy of the newly developed ob-

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[*] Grateful acknowledgement is made of the generous grants by the John and Mary R. Markle Foundation for support of this study. Acknowledgement is also made of the contributions of Richard S. Levine of Educational Testing Service to the statistical methodology of this special study and the contributions of Harry W. Garrison, also of ETS, for developing new machine techniques for processing the data.

[*] Part I includes examinations in the following six subjects. anatomy, including histology and embryology, physiology, biochemistry, pathology, microbiology and pharmacology.

[**] Part II includes examinations in the following five subjects: medicine, including psychiatry and legal medicine, surgery, obstetrics and gynecology, public health and preventive medicine and pediatrics.

[†] Cowles, J. T. and Hubbard, J P : "Validity and Reliability of the New Objective Tests of the National Board of Medical Examiners," Journal of Medical Education June 1951, Vol 26, No 6

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Table 1

MEDICAL SCHOOLS THAT USE NATIONAL BOARD EXAMINATIONS

(including Columbia University College of Physicians and Surgeons, Harvard Medical School and New York University College of Medicine where national board examinations are not required but are taken by virtually the entire class)

Albany Medical College
University of Arkansas School of Medicine
Boston University School of Medicine
University of Buffalo School of Medicine
**Chicago Medical School
Columbia University College of Physicians and Surgeons
*Georgetown University School of Medicine
George Washington University School of Medicine
Hahnemann Medical College
Harvard Medical School
**New York Medical College
New York University College of Medicine
*Ohio State University College of Medicine
State University of New York College of Medicine at N.Y.C.
*State University of New York at Syracuse College of Medicine
Temple University School of Medicine
Tufts College Medical School
Yale University School of Medicine

*Require Part I only
**Require Part II only

jective, multiple-choice tests which are now in use in all the written examinations of the national board. As pointed out in this earlier report, those who prepare an examination constitute the most important factor for insuring its validity (validity being defined as the degree to which a test distinguishes between those who, by accepted standards, are well qualified and those who are not well qualified in the subject of the test). Each of the examinations is prepared with the utmost care by a separate national board test committee specially appointed for that subject. The members of these test committees are medical school department heads and teachers with recognized prominence in their own fields. They are selected with wide geographic distribution. Technical guidance in the design of questions and statistical analyses of the results is provided by test experts of the Educational Testing Service. Correlations between the new multiple-choice examinations and the essay form previously used by the national board, and correlations with independent ratings of students in their own medical school departments have demonstrated that the multiple-choice examinations have very satisfactory validity and higher validity than the essay tests.

The reliability of the new tests (reliability being defined as the degree to which the test measures a person's ability in a precise and stable way) also has been shown to be high. This reliability of measurement is largely due to the use of a large number of questions on each test in which the selection of each question has been guided not only by the considered judgment of the test committee but also by detailed statistical analyses. The variability, which is characteristic of the grading done by individual examiners, has been eliminated by machine scoring. Moreover, standard techniques of score scaling and year-to-year equating of the scale are now applied to each test.

Student Performance

For each examination, the test committee responsible for that exam-

TABLE 2

MICROBIOLOGY

Mean Category Scores for Each of 16 Schools

School code	Number of candidates	CATEGORY Bacterial physiology and chemistry; nutrition	Morphology, classification, genetics	Effects of physical and chemical agents, chemotherapy, antibiotics	Infection and resistance	Antigens, antibodies and their reactions	Hypersensitivity	Immunization procedures	Bacterial infectious diseases, including pathogenesis and laboratory diagnosis	Viral and rickettsial diseases, including pathogenesis and laboratory diagnosis	Mycology	Parasitology	Total test
C	53	7.7	12.6	10.3	8.0	15.3	6.5	6.5	36.1	18.0	4.9	15.0	140.9
F	75	6.1	11.1	9.1	7.0	13.2	6.4	4.4	33.4	12.2	6.6	15.1	124.8
O	72	7.1	11.5	9.0	7.3	14.2	6.9	6.7	35.7	16.0	6.4	14.4	135.2
B	71	8.0	13.9	10.4	8.9	16.2	7.4	7.1	38.4	19.0	6.1	12.8	148.3
T	101	7.4	12.9	9.2	7.4	14.9	7.3	7.0	36.7	18.7	5.4	15.2	142.0
N	111	6.5	12.9	8.8	8.2	13.2	6.9	5.9	33.8	14.2	5.0	12.8	128.2
A	75	7.6	12.6	10.0	8.4	15.4	7.0	7.0	36.8	17.2	5.7	13.0	140.7
Y	94	8.1	14.1	10.0	8.3	15.0	7.5	6.8	38.7	17.4	6.9	13.7	146.5
S	109	7.8	12.6	10.0	8.0	16.6	7.0	7.2	36.7	16.8	6.8	12.8	142.2
D	124	8.4	14.9	9.1	8.6	16.6	7.1	6.7	39.2	17.1	6.6	14.8	149.1
P	135	7.7	14.0	10.4	8.6	16.4	7.8	7.0	36.5	17.0	6.1	17.6	149.1
K	133	7.5	10.9	10.0	7.5	14.9	6.4	5.8	34.7	12.6	5.4	9.4	125.1
V	70	8.0	13.2	10.0	7.7	14.2	7.5	7.0	35.9	19.6	5.5	13.5	142.2
E	122	7.8	13.9	9.9	8.2	16.6	8.0	6.9	41.3	19.2	7.6	15.1	154.4
I	108	7.4	13.0	10.0	8.1	16.2	7.5	7.1	35.8	17.1	5.6	14.6	142.4
J	78	8.1	13.6	10.5	9.1	15.7	7.8	7.2	37.9	20.7	7.8	14.2	152.7
All schools	1531	7.6	13.0	9.8	8.1	15.4	7.2	6.7	36.8	16.9	6.2	14.0	141.6
Number of items		12	17	15	12	22	12	10	55	33	10	22	220
Per cent right for all schools		63	76	65	68	70	60	67	67	51	62	64	64

TABLE 3

OBSTETRICS AND GYNECOLOGY

Mean Category Scores for Each of 15 Schools

School code	Number of candidates	CATEGORY											Total test
		Embryology, anatomy and physiology of female organs of reproduction	Pregnancy	Physiology and conduct of normal labor and puerperium	Complications of pregnancy—toxemia	Complications of pregnancy—systemic infections	Complications of pregnancy—others	Complications of labor and indications for obstetric operation	Complications of puerperium	Hygiene and physiology of woman and function disturbance	Malformation and malposition of pelvic organs, infections of reproductive tract, extra-genital pelvic lesions	Neoplasms	
C	48	8.0	12.4	6.7	12.0	9.6	14.5	13.9	10.8	16.6	11.2	30.1	145.7
F	78	6.9	12.9	7.0	11.8	9.9	14.7	13.8	10.7	15.6	11.1	30.1	144.5
O	70	7.2	12.3	7.0	12.0	9.9	14.3	12.5	11.4	15.6	11.3	29.6	143.0
B	60	7.6	12.3	6.9	12.4	10.2	15.1	15.7	11.4	16.0	12.5	31.5	151.7
H	72	7.6	11.3	6.7	12.0	9.1	13.2	15.2	11.0	15.5	11.6	30.1	143.2
T	106	7.0	12.8	7.2	11.9	9.5	15.4	12.0	11.5	17.2	11.5	29.7	145.8
A	92	7.7	12.7	7.7	12.9	10.4	16.1	15.6	11.7	16.3	12.4	30.9	154.4
Y	80	7.7	11.7	8.0	12.6	10.3	16.8	16.4	11.3	15.9	11.4	31.7	153.6
S	110	8.0	12.9	7.5	12.7	11.1	15.6	14.8	11.5	17.1	10.6	29.2	150.9
D	141	8.5	13.3	7.7	12.5	10.3	15.8	15.4	11.4	16.8	13.1	31.4	156.2
L	120	8.0	11.7	7.1	11.7	9.9	13.8	14.6	11.0	16.0	11.6	29.3	144.5
P	116	7.1	12.6	6.6	11.9	9.7	15.2	15.2	11.8	15.8	11.5	30.5	147.7
E	114	7.3	13.3	8.2	11.8	9.8	15.0	16.4	12.1	17.1	11.2	30.7	152.8
I	98	7.4	11.5	7.7	11.4	9.8	13.9	13.5	11.4	16.1	11.4	29.9	143.9
J	61	8.4	13.8	7.6	12.3	10.2	15.8	15.4	11.6	17.2	12.2	31.9	156.4
All schools	1366	7.6	12.5	7.3	12.1	10.0	15.0	14.7	11.4	16.4	11.7	30.4	149.2
Number of items		11	18	12	18	14	22	20	15	23	16	41	210
Per cent right for all schools		69	69	61	67	71	68	74	76	71	73	74	71

ination subdivided the subject matter into approximately 12 subdivisions or "categories." Each question was assigned to the one category to which it was principally related. The performance of the students in answering the questions of each category then formed a basis of the comparison of the schools. A mean score was computed for each category for each school. In effect, each student's answer paper was scored on the items (questions) comprising each category, thereby deriving for each student's test paper a set of category "scores." Since every test item was included in one and only one category, the sum of the category scores equalled the total test score. For each school, then, the mean category score became the mean of these individually derived scores for all students tested in that school. No individual student's category scores were reported separately.

In order to show the manner in which all subjects have been analyzed, tabulated and charted for each of the six subjects of Part I and for each of the five subjects of Part II, one subject has been selected from each part—microbiology from Part I and obstetrics-gynecology from Part II.* For these two examinations, Tables 2 and 3 show the mean score for each category for each school included in the sample. In addition to the mean category score, each table indicates the number of students tested, the number of questions in each category, and, in the bottom row, the mean for the total group of students on each category expressed as a per cent of correct responses made by the total group of students in each category.

Bar charts (Figures 1 and 2) show more clearly the range of success with which the entire group of students answered the questions in each category. Thus, in the microbiology examination (Figure 1) in the category of questions labeled "Viral and Rickettsial Diseases," the total group of students answered 51 per cent of the questions correctly. They had more success in answering the questions dealing with morphology (76 per cent correct responses). A similar variation appears in the obstetrics-gynecology examination (Figure 2) where students had trouble with the questions dealing with normal labor (61 per cent correct), while they did better with the questions about the complications of the puerperium (76 per cent correct).

It should be noted that these comparisons are based on groups of questions none of which contains less than 10 questions. It is a temptation to draw conclusions from the success of a group of students in answering a single item which may be thought to have particular value in revealing the student's knowledge of an important point. But, considering the limited area covered by a single multiple-choice question, conclusions based on any single question, even though the data were quite reliable, would be of dubious significance. In this study, therefore, statistically reliable differences among schools obtained on groups of less than 10 items were considered to have no practical educational significance.

In interpreting the data in these tables and bar charts one question immediately arises: are the differences in per cent right responses for the several categories a real reflection of student knowledge in a particular category, or are the results merely due to more difficult items in one category than in another? This question cannot be answered from our data, since it is impracticable to compute item scores or category scores corrected for relative difficulty of those items or categories. It was not, however, our purpose to compare the difficulty of categories, but rather to determine the extent to which student performance in any one school differs from the mean performance in all schools.

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*Complete data are recorded in multilithed reports for all subjects; a limited number of complete reports are available on request from the senior author.

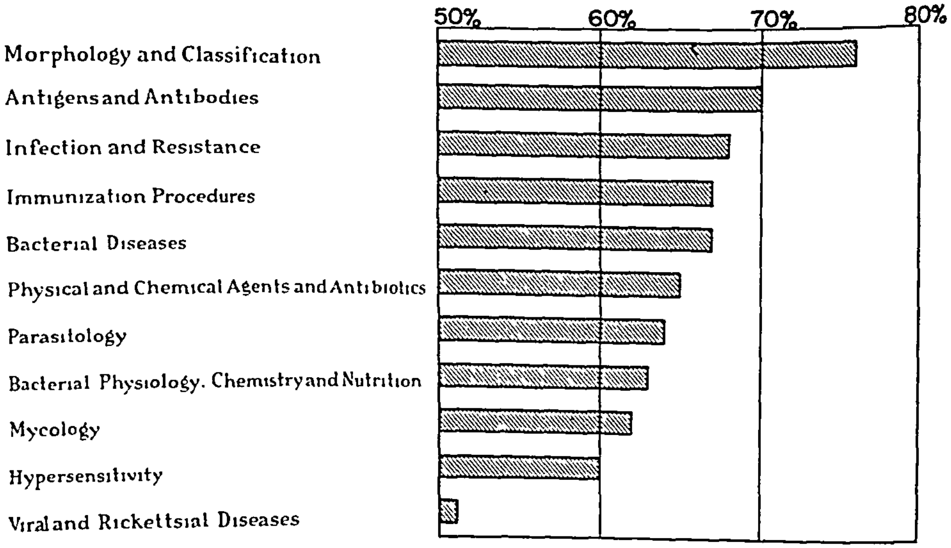
Comparative Performance

In order to demonstrate the comparisons of student performance in the schools, the variability of the mean scores obtained by students in the several schools is shown graphically in Figures 3 and 4 for the two subjects, microbiology and obstetrics-gynecology, used as examples for the purposes of this paper. For each category the schools, designated by a code letter, appear in rank order of their mean performance, the school with the highest mean appearing as the highest point on the line representing the category. The ordinates are presented as standard deviates of school means.* The horizontal lines at -2.6 and +2.6 standard deviates divide the graph in three arbitrary regions. Assuming the points on this scale have a normal distribution, if there were no true differences among the schools, the chances would be less than one in 100 of a school mean falling in the region above the upper line or the region below the lower line. Thus, if a school mean falls in one of these outer regions, it is likely

FIGURE 1

MICROBIOLOGY

Percent Correct Answers by Categories of Subject Matter
(16 Schools in Sample)



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*This measure is based on the ratio of among-schools variability to within-schools variability, as determined in analysis of variance. The difference of any one school's mean from the group mean is divided by an average standard deviation of scores within the schools, and the resulting quotient is plotted on the standard scale.

that the performance of its students is truly different from that of the total group of students.

It should be noted that the vertical distance between any two points on the graphs is proportional to the magnitude of the differences between the means only within one category. However, the units in which the graphs are drawn have been reduced to a "standard" scale which essentially equates the number of items in each category, and thus permits category-to-category comparisons—but only in terms of this standard scale. It should also be noted that equal increments in standard deviates do not represent equal increments in probability. As one moves away from the overall mean (standard deviate equals 0) the difference in probability associated with a fixed difference in standard deviate becomes smaller.

When reviewing these graphs, one should bear in mind that strikingly large deviations indicate only that the likelihood is very small that the observed difference occurred by chance. With as large a total group as was used in this study, relatively small differences can become statistically reliable; therefore, not all of the reliable differences may be judged to be of primary importance. The question should always be asked: do the observed differences have practical educational significance?

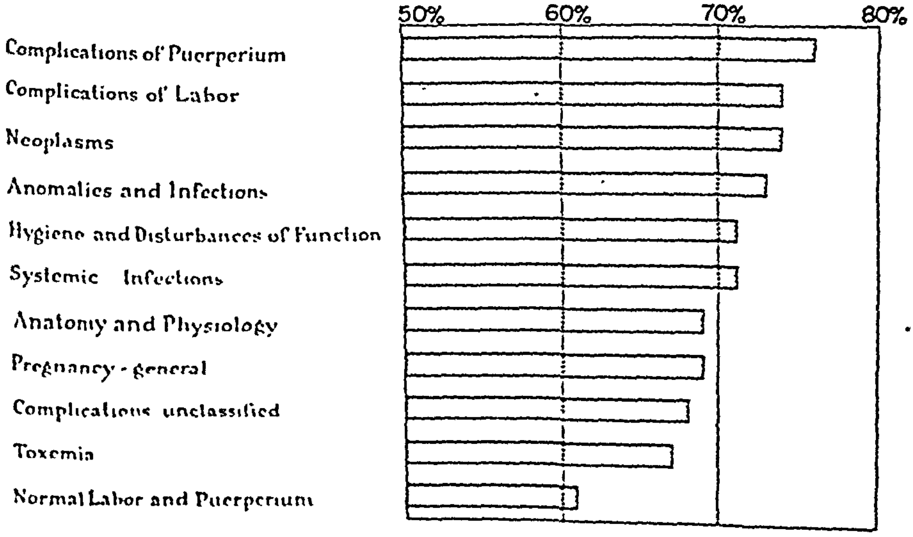
A Profile of Performance

By connecting the points representing a particular school, it is possible to draw profiles of the per-

FIGURE 2

OBSTETRICS AND GYNECOLOGY

Percent Correct Answers by Categories of Subject Matter
(15 Schools in Sample)



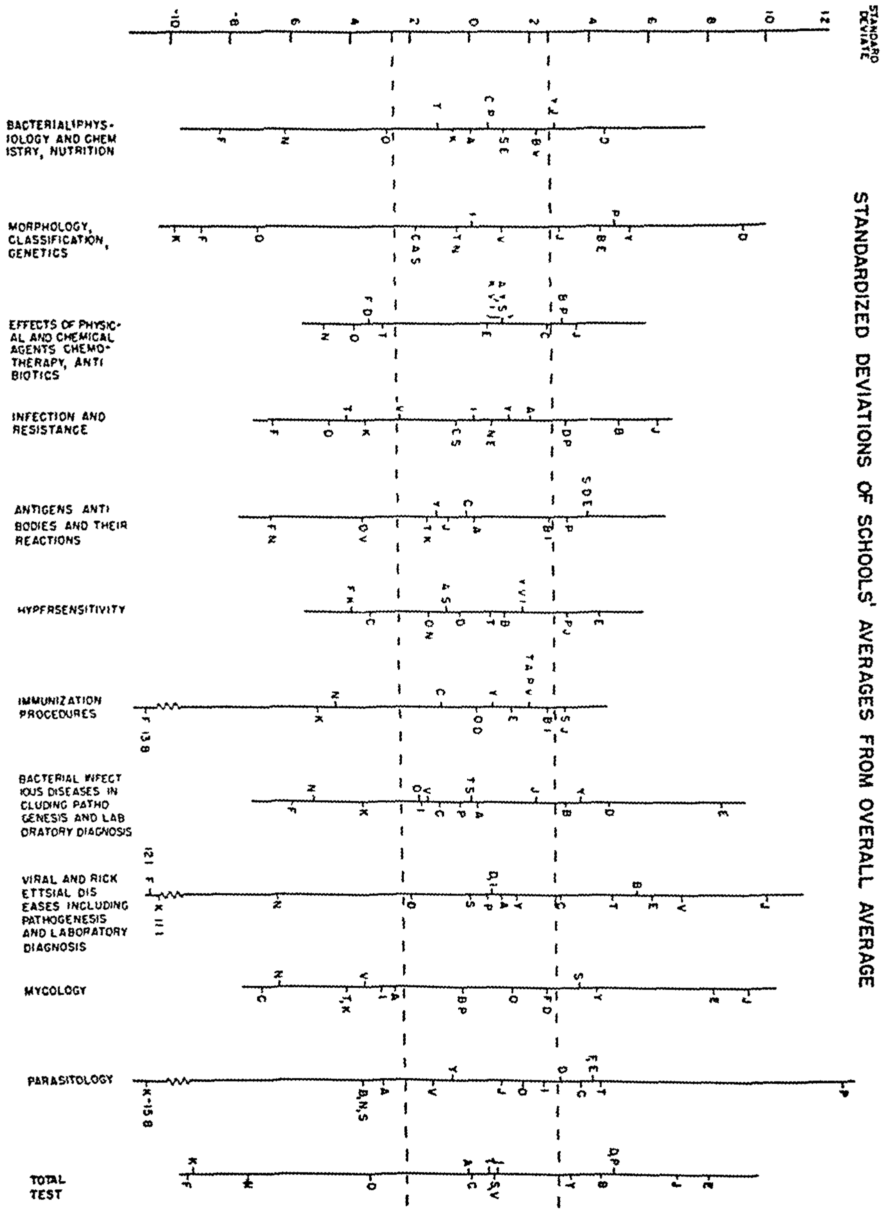


FIGURE IX

MICROBIOLOGY

STANDARDIZED DEVIATIONS OF SCHOOLS' AVERAGES FROM OVERALL AVERAGE

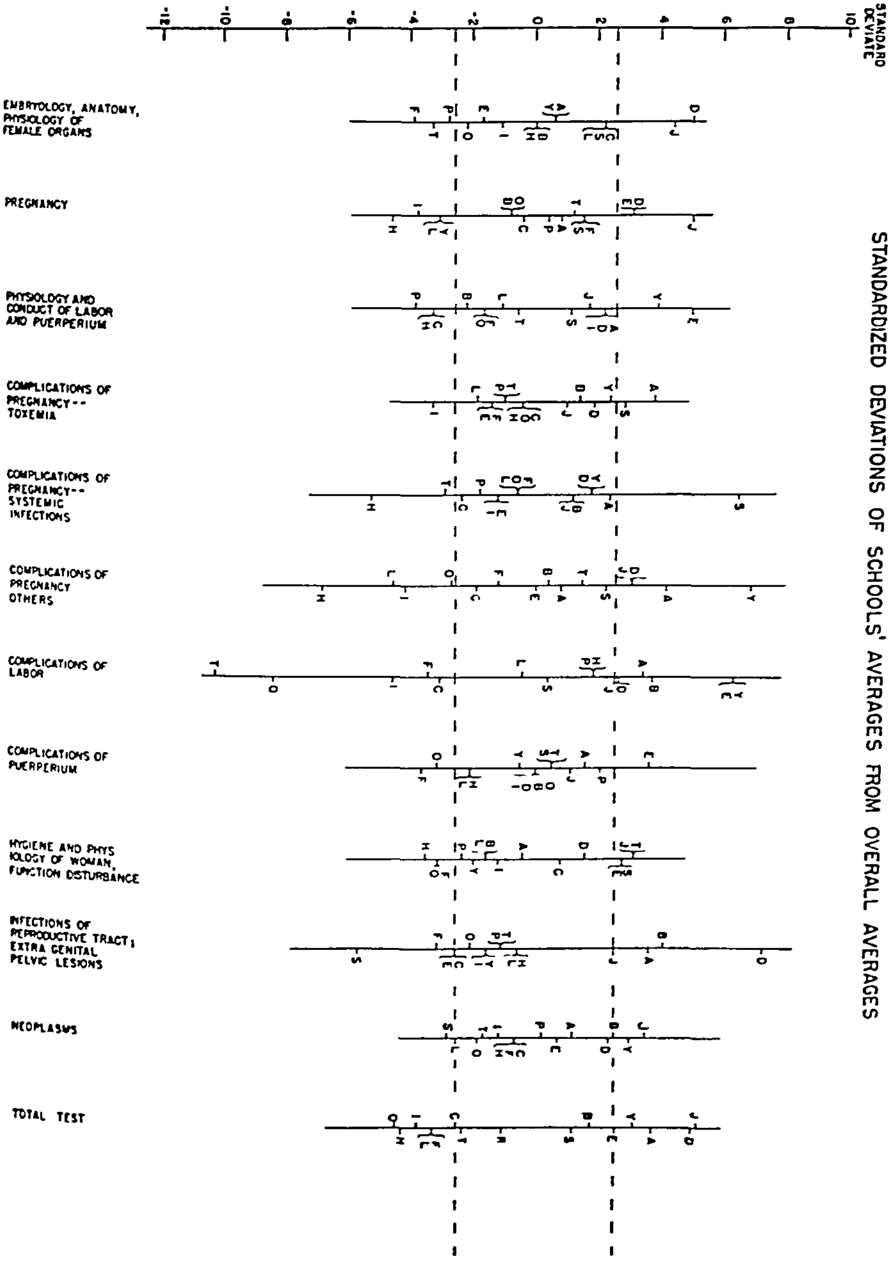
formance of the students in that school. This procedure will dramatically demonstrate whether the students of a certain school are consistently high, low or average in performance. Another school may show wide fluctuations around the group mean, high in some categories and low in others.

Thus, in the graph showing student performance in microbiology, school E rates highest on the total test, as indicated by the column on the extreme right. If, however, the E points

FIGURE III

OBSTETRICS — GYNECOLOGY

STANDARDIZED DEVIATIONS OF SCHOOLS' AVERAGES FROM OVERALL AVERAGES



are followed across the graph, it is seen that the students in this school had the highest mean score in only two or three of the 11 categories, although they were clearly better than average in seven categories, and below average in no category. On the other hand, the students of School F, lowest on the total test, were below average in all but two categories:

mycology and parasitology. Another school, coded T, appears in the central channel for the total test, better than average in two categories and below average in two categories.

Similar comparisons may be drawn from the charts derived from the obstetrics-gynecology test. The school which was highest in this test as a whole, School J (which was also very high in the microbiology test), was better than average in several categories, was at the top in a few and was average in other categories. School T again shows wide variations from top performance in one category to lowest performance in another.

Thus, the profiles show the strengths and weaknesses of each student group as reflected by the particular test. But a word of caution is indicated in interpreting these profiles for the significance of differences in profile patterns cannot be easily determined and many differences may not be true differences. In fact, it may be reasonably expected that a single school, by chance factors alone, might show a marked deviation in one category mean among many other category means.

Charts such as those used in microbiology and obstetrics-gynecology have been prepared for all 11 subjects of the national board examinations of Parts I and II. A full set of tables and charts for all subjects, together with an explanatory statement, has been sent to each school included in the study.*

Limitations

In general, any examination is an imperfect evaluation of a student. No matter how good the test may be thought to be, no matter how great a degree of statistical significance is attached to its validity, it is an index of only certain characteristics, measured at one point in time and influenced by variable factors. Normative test data of the kind developed in this study require, for their full interpretation, knowledge of the characteristics of each student group and of the total group of students with which its performance is being compared.

Perhaps the most important single factor which underlies gross differences in the performance of students from a varied sample of schools is the initial caliber of each student group. Medical schools differ in requirements for admission and the selected students vary in fundamental abilities and previous educational experience, especially when students are drawn from different geographic regions.

The performance of a group of students on a test of this nature is also determined to a considerable extent by their desire to do well. This desire to do well is strongly affected by the reasons for which they are taking the test. For example, if for one group of students the test is required and the grade used as one factor in computing the final grade for a course, while for another group the test is on a voluntary basis, then the motivation of these two groups would be expected to be different. Other factors influencing the motivation of the students might differ from school to school and would similarly affect test performance.

Furthermore, any test represents a considered but arbitrary small sample of test questions from among the many questions required to cover the varying curricula, varying emphases, varying requirements for course mastery or varying time since last exposure of students to the given course content. School performance on only a small set of questions, as from only one area of a test, is obviously more affected by the test committee's final choice of the particular questions for that small portion of the test, than on the test as a whole. It is far more likely that there will be marked differences among groups of students on a short test, such as a single category, than on a long test. Conversely, comparisons made on the basis of total test scores are statistically and educationally the most trustworthy.

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*When sending the report to each school, only the code letter of that school was identified. The code itself is held in strict confidence.

Another point that should be borne in mind is the fact that performance in one category of one test does not necessarily reflect the teaching content or quality of the medical school department responsible for that particular subject. For example, in the obstetrics-gynecology examination, the student's knowledge in the category of embryology, anatomy and physiology of the female organs will obviously include knowledge acquired in earlier courses in anatomy and physiology. Similarly correct answers to questions on the infections of the reproductive tract may reflect teaching in microbiology, clinical medicine, preventive medicine or almost any other subject. A good score in any one category indicates merely that somewhere during the course of his training, through the teaching in one department or another up to that point, the student has gained sufficient knowledge to answer these specific questions.

Finally, we wish to make it perfectly clear that in presenting the results of this study there is no implication of criticism of the curriculum content or teaching in any school. The national board has as its sole objective the preparation of the best possible examinations and their analysis and scoring in conformity with sound statistical methods. Any medical school faculty properly retains the right to determine for itself the importance to be placed upon any subject or any aspect of any subject. If its students perform less well than other students in any category of subject matter, the fact may be looked upon as quite unimportant if, in that school, the faculty has advisably given comparatively little attention to that subject.

Conclusion

The purpose of this study has been to record accurately and in detail the performance of medical students in examinations which are used in a sufficient number of schools and which have sufficient validity and reliability to offer an evaluation of the student performance in the schools concerned. The data provide a basis upon which one school may compare the product of its teaching with that of other schools included in the study. It is our hope that the results may be found useful in these schools and may demonstrate the availability of methods to measure not only the student but also certain aspects of the quality of medical education.

The Psychiatric Social Worker as an Aid to Group Process Teaching

KENNETH E. APPEL and MARGARET M. HEYMAN

A NEW COURSE, entitled "Introduction to Clinical Clerkship for Second-Year Students," developed at the University of Pennsylvania School of Medicine during the academic year 1951-1952. The teaching, shared by various departments, included such subjects as physical diagnosis, history taking, clinical microscopy and simple diagnostic aids. Psychiatry was one of the participating departments. The psychiatric assignment was conceived as an excellent opportunity to offer the student instruction, experience and guidance in the important processes of the approach to the patient, interviewing techniques and history taking.

History taking is the first contact of the student with the patient and relatives. To obtain a good history involves the development of a good relationship with the patient and relatives. From this point of view, therefore, this course affords instruction and practice in basic psychiatry, not separated and compartmentalized but closely integrated with medicine.

History taking has several aspects which are pointed out. It is not just a question and answer procedure, but comprises the following:

(1) Information. Information is gathered concerning the chief complaints, the development of the present illness and the past medical history. It also should include the patient's attitude toward the illness, his emotional reaction to it and speculation as to how this will influence the course of the illness and convalescence. This will involve some knowledge of the patient's personal and emotional background, his temperament, personality and important experiences in his life. The family's attitude toward the illness is important and also the effect of the illness on the family. Information on the family background is important, including economic, social and cultural factors, as well as a working knowledge of family relationships.

(2) Observation of the patient. Emphasis is given to the observation of the patient's nonverbal behavior, his restraint of tension, expression of worry, sadness, anger, the patient's neglect of his appearance, immodesty or excessive modesty.

(3) Interviewing. The attitudes of the interviewer are important in influencing the positive, giving responsiveness of the patient or in eliciting disappointment, irritation, negativism or withdrawal by the patient.

(4) Communication. The ability to ask questions effectively, not brusquely, impersonally and irritatingly is discussed. The importance of nonverbal attitudes and behavior is pointed out. Practice in effective ways of eliciting positive responses and relevant information is afforded and discussed. Communication is a two-way process involving not only the intellectual and verbal aspects of doctor and patient but also emo-

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Dr. Appel is professor of psychiatry and Miss Heyman is associate in psychiatric work at the University of Pennsylvania School of Medicine.

tional and personal attitudes. Conclusions are drawn from information reported in history taking and from observations noted as to the patient's and relatives' emotional responses and attitudes—their anxieties, irritations, reticence, worries, depression, distrusts, hopes, ambitions and frustrations.

(5) *Interpretation* of data from all sources.

(6) *Organization* of all material obtained is made emphasizing important aspects for diagnosis and treatment, indicating that a comprehensive review has been made, and including briefly information that is negative or not relevant to this particular condition or situation.

Awareness of and practice in these various elements of history taking will enable the student to become a better doctor and avoid mistakes as a result of hasty and superficial methods of acquiring significant data.

Psychiatric Program

In the development of the psychiatric part of the program two aspects immediately appear to be important: first, placing of the course in the second year of the medical curriculum and second, selection of patients from the wards, persons hospitalized for nonpsychiatric illnesses. Thus the teaching of psychiatry is given a broad, comprehensive medical basis. It is not compartmentalized. Psychiatry is introduced early to the medical student as a basic part of medicine, not as a specialty and not emphasizing psychopathology nor the study of psychiatric disease entities.

Before the student becomes fully engrossed in his study of disease entities and pathology of bodily systems, his human interest in people is rekindled. He can, in this course, acquire a degree of confidence in talking with patients. He can learn that talking with patients carries with it constructive or destructive therapeutic implications. He can discover that he is of value to the patient and grow in effectiveness in his relationship with patients. He has the opportunity also to think creatively about the patient as a person, about the potentials in his personality and environment rather than to think of him merely as a case with a list of symptoms. He can also learn that other factors besides bacteria, tumors or degenerative disease modify the patient's feelings, his sense of security and perhaps the course of the disease. He can discover what motivations and inhibitions govern a patient in health and illness, and how the patient's illness may modify these factors in personality organization.

Up to this point in the student's medical education, the curriculum usually has focussed on the structure and functions of parts of the body, the products of the organism and the function of the integrated physical organism. This course is the student's first intensive official exposure to the patient, the individual as a whole.* It is also the first opportunity for the student to examine his own emotional reactions, to reflect on himself as a person with feelings in response to the patient and to realize the importance and effect of his feelings and reactions on the patient.

Thus far the student's relationship with the instructor in the required curriculum in many cases could be characterized as distant, impersonal and even anonymous. In large lecture groups he has been presented material in an authoritative manner. He has been "lectured at." His lot was largely to understand and memorize what the textbooks and the professor said. In contrast, this course aimed at giving the student only a minimum amount of information for understanding. Through experience in the group process and experience with the patient, it was expected that the student would develop understanding and knowledge.

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*The family advisor course, with somewhat similar aims and covering all four years, is an elective course.

Most of the students are bound to have some anxiety which is not derived alone from lack of knowledge. Many other sources of it include inexperience, stress of new situations, responsibility regarding illness, possibility of making mistakes, ego threat of ineffective performance, uncertainty of patient's response to the student, his own temperament and "fund" of self-confidence, timidity, reserve or even hostilities, his attitudes toward instructors, father figures, authority (transference), medical school and hospital experience. Aloofness, irritability, aggressiveness, dislikes, protectiveness or relative nonparticipation have a basis in the student's feelings. This anxiety is a positive thing and can be dealt with constructively in this course.

Mechanics of Course

The mechanics of the course were as follows. A section of 12 students met with the psychiatrist and psychiatric social worker for 18 hours. This total number of hours was divided into six three-hour sessions distributed over a period of three weeks. There were nine sections of students throughout the year, and each section was led by a different psychiatrist. The psychiatric social worker remained the only constant figure throughout the year. All the psychiatrists had a common psychiatric frame of reference in spite of individual variations in teaching method. In the first, third and fifth meetings of the individual sections, the psychiatrist interviewed a patient in the presence of the group. The psychiatric social worker participated in the interview when indicated to bring out details concerning the patient's social milieu. In the second, fourth and sixth meetings, students in groups of two conducted their own interviews, the psychiatrist sitting in on part of each interview. At each meeting sufficient time was held available for discussion.

In spite of advance planning and discussion, all those involved in the teaching were feeling their way and exploring more effective teaching methods. Like the role of the psychiatrist, that of the psychiatric social worker became more clear as the course developed. The psychiatric social worker* performed various functions in this first experimental year. The worker participated in the planning of the course. She had an important place in its administration. She provided a sense of continuity which afforded opportunities to make observations of importance educationally. She discussed with the new instructors the reactions of the previous groups and the group experience as a whole up to that time. During the seminars, the worker participated with the psychiatrist in the demonstration interview of the patient. In the seminar discussion of the interview, there was active participation in the discussion from several points of view. One was to bring to consideration the importance of the environment and the effects of the environment in the particular patient. Another was to stimulate and catalyze group discussion. This activity grew out of the worker's observation of the reactions of the students individually and as a group to themselves and to the psychiatrist. Following each seminar, these observations of the session were brought to the conference with the psychiatrist. In addition, during the seminars, the worker observed the effect of the individual psychiatrist's approach on the group. In conference with the psychiatrist, the worker helped to evaluate his method in the light of her experience with other groups and with previous sessions of his group. Individual discussion as well as conference with the whole group of instructors implemented the important role of the worker in analyzing and correlating the inevitably diverse approaches of the instructors.

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*Margaret M. Heyman, associate in psychiatric social work, was the organizing and participating psychiatric social worker during the year 1951-52.

Regardless of the different approaches of the individual instructors, it was observed that all groups at some time or other had anxiety in and about the discussion. This was shown in varying amounts and in different ways. Within each group certain students stood out as having more anxiety than others. The students' most rational and most easily verbalized concern was around their lack of medical knowledge and experience. Significantly, it was confined to the early sessions of each group, before students had interviewed a patient or before their second interview with a patient.

The area of finances was often the spot where anxiety easily came out. In one group, when the discussion touched on the subject of fee setting, the students suggested many ingenious methods for establishing a patient's ability to pay. Not one student offered the possibility of direct discussion of economic resources with the patient himself. When the instructor brought up this method for fee setting, there were immediate and strong objections on the basis that such questioning violated the patient's private life.

Common to all sections was an ambivalent response to this experience in a small group. In contrast to the large lecture group or even the smaller laboratory group, students were encouraged to speak out informally concerning their reactions and feelings on the matters under discussion. A few students resisted in a passive fashion — remaining silent throughout or absenting themselves. The greater number, however, expressed themselves negatively about the approach in the early sessions only, joining in as participating members of the group in due course of time. In the beginning some asked directly for a more didactic approach. Some complained that they were not told what attitude to take in interviewing. Others in some groups found fault with early sessions as being "too speculative." The instructor was "making mountains out of molehills" in his discussion. They challenged the instructor with such remarks as, "You can't cut it," "You can't show it at postmortem." Here students are dealing with emotional rather than organic pathology.

Some students in every group were suspicious of the dynamic approach suggested for understanding patients. They preferred to relegate such an approach to the psychiatrist in his psychiatric interview rather than to see it as part of a comprehensive medical approach applicable to them as general practitioners or other medical specialists. There would not be enough time for them to listen to the patient in this way. Furthermore, it often seemed to the student that the psychiatrist was a kind of detective, always looking for something abnormal, probing and somehow interfering with the patient and making him uncomfortable. It was none of the doctor's business to inquire about the family. It was a violation of the patient's privacy to ask about the economic resources for this illness. Generally speaking, such attitudes gradually disappeared as the student experienced some success in interviewing his own patients and as he understood the relevance of such information.

It was apparent that considerable feeling was evident in those students who remained silent and in those who absented themselves after certain anxiety-producing discussions, or when they themselves would have the opportunity to interview patients. Some made sarcastic jibes at the instructor; others commented jokingly to their neighbors.

One of the important roles of the worker was to help establish the instructor in the students' eyes as a person of experience with a permissive, nonauthoritarian attitude who accepted individual expression of feeling and reactions. Indirectly in this role the worker also was interpreting to the student some of the attitudes essential to his development as an effective physician. In the group this was accomplished in several ways, taking care not to shut off expression, but rather to spark and stimulate it.

For instance, the instructor had just interviewed Patient D, a very assured foreman who volunteered during the session only that he supervises 100 men and is an excellent student of psychology. He actively resisted the instructor's attempts to learn much more from him than his physical symptoms although he related these in great detail. The instructor did learn, however, that the patient's mother was alive and that his father was dead. The instructor, apparently not hearing this response, questioned the patient about both parents' current health. The patient reacted with some irritation. In discussing the interview, most of the students were quick to see that this patient had resisted revealing himself as a person. The worker wondered if the instructor had some feeling about this particular patient and cited his lapse of memory related to the patient's response about his parents. The instructor was free to admit he had not heard this response and several students corroborated worker's statement of what patient had said. This very easily led into a discussion of the reaction of the interviewer to the interviewee, how one's reactions to something about the patient may cause blind spots in the interview. The instructor admitted that he had not felt warmly to this patient's bragging manner. Various students followed with their own and varying responses to this patient. A lively discussion ensued with no further "sparking" needed from the worker. This example illustrates the worker's attempt to aid in creating an atmosphere in which the instructor could be questioned, in which there was a willingness to share thoughts and feelings in the quest for a comprehensive understanding of the patient. In such an atmosphere the student could question vigorously and disagree with the authoritative figure of the instructor, and in some instances even express antagonism to him without reproach and with group support.

However, for the worker to be able to respond in the spontaneous way in the session as described in the above example depended to large degree on how the individual instructor saw his role with the group.

Instructor W's approach was benignly didactic. Very little anxiety was shown in his group because he gave his answers to questions raised in a conscious effort to keep expression of feelings at a minimum. He presented to the students blocks of pertinent psychiatric material rather than allowing this material to develop out of the discussion of the individual patient interviewed. In this situation most of the worker's activity was confined to observing the students' reactions to this approach. It was found that her verbalizations in this group lacked spontaneity. Because this approach anticipated passive acceptance from the students, the worker could find no real place to participate along the lines of stimulating free group expression.

The same was true of the worker's role in Instructor X's group. In contrast to Instructor W, however, an aggressive attempt was made toward student participation by calling on individuals to speak about their feelings and reactions. Too much anxiety was aroused with this method, and absenteeism among the students was prevalent.

The goals of the course were most closely met with those instructors whose method was nonauthoritative, nondidactic and permissive. With this permissiveness, however, an active ingredient of encouragement of spontaneity was important. Thus, spontaneity bred spontaneity and helped to discharge the group's anxiety.

Instructor Y was nonauthoritative, nondidactic and permissive, but difficulty arose in the beginning in his group with the delay in allowing students to interview their own patients, usually planned for the second meeting. In this section it was not until the fourth meeting that students interviewed patients for themselves. Because realistically they had felt no responsibility for any patient up to that point, all their anxiety was focussed on the instructor—on the authoritarian person he appeared to be in their eyes. They openly expressed antagonism to him in the third meeting. He had, with reason, described the patient just interviewed as placing all responsibility on the doctors, in an effort to show one facet of a very dependent personality. A number of students sharply remonstrated with the instructor for assuming too much on insufficient evidence. Apparently to overcompensate for their lack of medical knowledge of the significance of personality types in disease, the students protested that the patient *should* put himself in the doctor's hands. Here was an opportunity to discuss this patient's habitual reactions of dependency and the fact that if the doctor does not recognize this tendency he may stimulate the development of neurosis in the patient. Here also was discussed the importance of the doctor's recognition of what he does to a patient whose primary needs are to develop aggressiveness when he takes away initiative and responsibility from the patient. During all of this, in no way did the worker defend the instructor's point of view and procedures. At the next meeting, finally interviewing their own patients, the students were reassured by the experience of talking with a patient and their ability to elicit a positive response. They had secured information from their patients and also had given them something. Their anxiety was dissipated to a large extent. In this and subsequent discussions spontaneity in this group was increased because the students' anxiety was not arising solely out of their relationship with the instructor. There was now a realistic basis for the spontaneity in their relationship with the patient. The patient's relationship with the student was soon seen and felt not to be as threatening to the student's confidence and capacities as had been anticipated.

Subsequent instructors avoided the unnecessary anxiety created by delayed interviewing by students. Where their approach was nondidactic and nonauthoritative and encouraged spontaneity, the psychiatric social worker's activity, as illustrated with Patient D above, seemed to cement the instructor's approach and render it less threatening for the students. Spontaneously, students brought in their own experiences and reactions and freely questioned the instructor and each other. This seemed to be the optimum milieu for the cooperative exploration and discovery which is learning and education.

Summary

In summary, that portion of a new course allotted to the department of psychiatry at the University of Pennsylvania School of Medicine has been described. It has appeared that the students' anxiety in this course needs careful consideration.

The importance, value and contribution of the psychiatric social worker in this course has been brought out. Her role in the planning, organization, administration, execution and continuity of the course has been mentioned. Particular emphasis was given to the worker's observation of group phenomena, how and where anxiety displayed itself, the different effects of anxiety in the group, the varying teaching methods of the different instructors, the reactions of the students to them and the effectiveness in teaching. The worker brings these observations to the instructor for discussion in terms of the information itself, the expression of feelings, and suggestions for future procedure. All of this enhances the effectiveness of the instructors.

The experience in this course brought to our attention the importance of how the worker stimulates freer group expression, how spontaneous expression of feeling and ideas and group discussion and the development of group "spirit" are stimulated, how resistances in the form of nonparticipation, irritation and aggressiveness are overcome, how all of this tends to mobilize the activity for which this course exists and sets it in motion.

The psychiatric social worker has most success in teaching when teamed with instructors whose method is permissive, nondidactic, nonauthoritative and aimed at providing spontaneity in the group. The instructor's personality is important also; his expressiveness, confidence, friendliness and lack of anxiety, haste, dogmatism, authoritarianism and compulsiveness are as essential in this course as his fund of knowledge. And finally, the individual conference between psychiatric social worker and student at times seems to be helpful.

In this course, which is not designed as therapy for either the students or the patients, the students nevertheless have the opportunity to see in operation various phenonomena and processes which are important in relationships between people. These phenomena and processes are obviously important not only in actual therapy but also as we have seen here in an early course in medicine in facilitating history taking and relationships with patients.

Editorials and Comments

Progress in the Distribution of Physicians

MEDICAL EDUCATORS ARE fully aware of the fact that physicians must not only be well trained but also must be well distributed if modern medicine is to make its maximum contribution to the health of our population. It is therefore very encouraging to find that the preliminary report of a study long in progress[1] reveals that the distribution of physicians in this country is actually very good.

Earlier studies such as that reported in 1924 by Mayers and Harrison[2] indicated that the ratio of physicians to population tended to be as low as one physician to 536 persons in cities of more than 100,000, and as high as one physician to 1,238 persons in populations in and about communities of less than 1,000 persons.

Dr. Dickinson's study[1] involves dividing the country up into its chief trading areas and studying the needs of each trading area for physicians' services. He found, interestingly enough, 757 such trading areas as contrasted with something like 3,070 counties and 1,200 local public health units as recommended by the American Public Health Association's Committee on Administrative Practice.[3] He found: that 100 per cent of towns with a population of more than 5,000 had at least one physician in active practice; 96 per cent of towns with a population between 2,500 and 5,000 had at least one physician in active practice; 88.3 per cent of towns with a population between 1,000 and 2,5000, and 21 per cent of towns with a population between 100 and 1,000 had at least one physician in active practice. According to his studies, only one-sixth of 1 per cent of the population lives outside a 25-mile radius of the homesite of a physician in active practice.

This study is very reassuring, but it would certainly not justify any relaxing of our efforts to stimulate and facilitate the settlement of young medical graduates in rural areas. Our medical schools must continue to highlight the urgent needs of the rural communities and endeavor where possible to provide their students with some preceptorship experience with a rural practitioner. The organized profession must continue to collect and make readily available accurate information as to where deaths and retirements make young physicians badly needed.

Medical colleges may work to real advantage with local communities that feel they need a physician but don't know how they can go about attracting and holding one.[4] Whether the medical education scholarship-loan programs in the eight states currently sponsoring them will actually result in permanently settling more physicians in rural areas is still to be determined, but the facts in the case should shortly begin to become available. Modern development including the automobile, good roads, the telephone, snow removal machinery, rural hospitals aided by Hill-Burton grants, postgraduate medical education programs and group practice certainly make a rural practice less isolated and much more attractive in every way. Let us be thankful they are operating to the advantage of improved physician distribution too.—D.F.S.

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1. DICKINSON, FRANK G.: "How Bad Is the Distribution of Physicians," *J.A.M.A.*, Vol. 154, p. 1209, April 3, 1954.

2. MAYERS, L. and HARRISON, L. V.: "The Distribution of Physicians in the United States." General Education Board, 61 Broadway, New York, 1924.

3. EMERSON, HAVEN: "Local Health Units for the Nation." The Commonwealth Fund, New York, 1945.

4. MURPHY, FRANKLIN: "Medical Care in Rural Kansas—The Problems and Its Proposed Solution." University of Kansas School of Medicine, 1950.

What's in a Teacher?

AN EFFECTIVE TEACHER is synthesized from equal amounts of knowledge of his subject and of the ability to transmit. Thomas Francis Maher[1, 2] has considered some of the points which relate to ability to transmit and his incisive comments are worthy advice to medical educators.

Maher's points divide into two groups: (1) attributes of the effective teacher—positive factors and (2) obstacles to effective teaching—negative factors.

A few of the attributes of an effective teacher include:

Vitality: "No one who lacks interest is receptive to learning . . . . . education is salesmanship to willing customers . . . . . In a word where interest wanes, learning never starts."

Clarity: "Students do not come to college to be impressed . . . . The lecture should definitely be adapted to the education level of the class . . . . . . There is very little in the catalogue of human knowledge, no matter how abstract it may be, that cannot be clarified by illustration, analogy or specific application. Repetitio est mater studiorum."

Visual Instruction: "At the mention of visual aids, the average instructor thinks of himself as the spirited voice in the dark as the slides parade before his class . . . . . . The spotless blackboard is the oldest visual aid of all——Visual aids can become a form of window dressing to hide a lack of knowledge and assurance."

Provocation: "Do our finished products have in them the luster of forged and beaten steel or the brittleness of poured cast iron? We only find truth after struggle and mental turmoil."

Questioning: "The proper use of questioning can be a teacher's most effective technique. Questions should be well stated . . . . . . If a question is directed to the entire class, alertness will be sustained."

Assurance: "When an instructor steps before a class, he has every reason to and does believe that he is the master of the room . . . . . . Intellectual respect must be commanded at all costs even in retreat, not in the arrogance of a demagogue but in the humility of a scholar."

Teaching Environment: "The administration usually sets the stage for equipment and surroundings . . . when drowsiness appears to overtake the class, it may be due to poor ventilation, inadequate lighting, noise in a corridor or in a nearby classroom."

The Personal Touch: "When a class is recognized as a group of living, breathing persons and not as an impersonal audience, we can expect things to happen intellectually . . . . . . to know the student is to understand the reason for his doubts, failures and triumphs."

Obstacles to effective teaching include:

Appearance: "Classes do not assemble for a spectacle either from *Esquire,* the *Hobo News* or Dickens." (The white coat may be the golden mean of the medical school teacher.) . . . . "The attention of the class should be directed to the teacher and his pearls of wisdom and not to the garishness of his necktie, the misfit of his clothing, the color of his shirts or the absence of his haircut."

Vocal Expression: "In this matter there are several aspects that must be considered: quality, volume, speed, pause and enunciation . . . . There is no substitute for good speech—unless it be silence. Classroom distractions are sufficiently plentiful without manufacturing more."

Mannerisms: "The class can be interested in but one thing at one time and that cannot be a side attraction. The space gazer, the doodler and the contortionist are not members of the teaching profession. The true objective is to make the subject itself keep the class on edge."

Arrogance: "Learning is not a contest of wits to be played with slurs and snide remarks . . . . . it is rather the patient leading of hungry minds from fact to fact and truth to truth. To hinder the desire to learn through fear and abuse is certainly no credit to the high art of teaching."

In the advancement of medical education, effective teaching should stand ahead of research, publication and general excellence of scholarship.—J.Z.B.

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1. Maher, T. F.: "Gilt for the Lily" *Bull.* Amer. Assoc. Univ. Prof. 34, 382, 1948.
2. Editorial, *Jour. Chem. Ed.* 26, 1, 1949

Medical Schools and Base Hospital Units

In World Wars I and II it was a commonly accepted practice to recruit a base hospital unit in a medical school and plan on calling it out as a unit if and when the need arose. The military advantage of such an arrangement was obvious: it made available on short notice a well balanced, already constituted medical, surgical and specialist staff who were known to be competent and were accustomed to working together. The fine records made by many of these units attest to the general wisdom of that type of organization at that time in history.

In the planning for medical education in a possible third World War, a number of basic developments would appear to make it necessary to re-evaluate this whole principle of recruiting base hospital units from medical college staffs. In World War III the industrial population at home may be expected to suffer as much attrition as the forces in uniform; will it be wise then to deprive our medical centers of their clinical staffs that will be so badly needed to care for bombing casualties and keep our industrial manpower in productive activity? In World War III atom bombing will result in such numbers of casualties that there will be urgent need for greatly increased numbers of doctors; will it be wise to take from any medical school any basic science teacher or physician who is making an important contributon to the turning out of new tice certainly make a rural practice less isolated and much more attractive in every way. Let us be thankful they are operating to the advantage of improved physician distribution too.—D.F.S.

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If medical school faculties are to be permitted to make their greatest contribution in any future war, they must continue to have available the hospital and laboratory facilities and the technical assistance they find so essential to a program of teaching, research and community service. And the staff must be left essentially intact. Some of the younger men can, without hazarding the three fold program of the school, be spared for military field service for periods up to two years, and by careful planning some of the older men may be alternated for shorter periods of field duty. But the day when it was wise to pull a complete base hospital staff out of a single medical school is, in the opinion of the author, over—D.F.S.

Our Readers Write

Do We Need to Recruit Candidates for Medicine?

To the Editor:

THOSE OF US who have taught medical students for many years were surprised and delighted at the attitude of the returned veterans of World War II. They were mature, serious, hard working and very appreciative of all that was done for them. In every way they were satisfactory and it was a pleasure to teach them.

With the departure of the veterans, we have been rather disappointed in more recent candidates. It also appears that fewer college students are applying for entrance into the medical schools of our country. Will this lead to a lowering of the quality of our future graduates? Is good material for medicine going into other activities or unable to attend our schools?

In considering these questions let us examine first what factors lead young people into the profession of medicine, and second what influences are luring good material away or preventing them from applying. Below, I am listing nine reasons for and nine reasons against, which may enter into a student's decision. Completeness is not claimed for these lists, but they may help us to think about the problem and possible solutions.

A partial list of why students choose medicine as a profession:

1. To make a good income in an ancient and respected profession.
2. To enter an interesting field of

work where problems must constantly be solved and where scientific methods must be applied in the solution.

3. To be a leader in his community, to be looked up to, often to rise above the social level in which he was reared.

4. To help his fellowmen, relieve suffering and do good to mankind.

5. To be in a learned profession where constant study is essential.

6. To be in a private enterprise where his own initiative and efforts will largely determine his success.

7. To aspire to prominence in research.

8. To follow a family tradition especially if the father was a physician.

9. To further a religious movement by becoming a medical missionary.

A partial list of reasons why acceptable candidates are not applying for entrance:

1. They are unwilling to do as much work as the strenuous curriculum of the medical school demands.

2. They prefer to enter the fields of engineering, chemistry or physics if scientifically minded. In this great age of technical advances their efforts are sure to be sought and rewarded.

3. They are attracted by the large industries which vie with one another for the best college students and pay them well at the start.

4. They wish to marry early and rear families, a practice now prevalent among our young people. In doing this they don't want to go into debt or require their wives to earn money as is so often the case when the husband is a medical student.

5. They may overemphasize the material things in life to the detriment of the desire to be humanitarians.

6. They may lack the financial means or the possibility of borrowing money or receiving a scholarship to study medicine.

7. They may be unable to attend the school of their choice or any school because of geographical restrictions of the schools or other restrictions such as those of race, color or religion.

8. They may be turned from medicine by the adverse publicity given the profession by advocates of governmental control.

9. They may fear that excessive requirements of the military and the government may in the future restrict their freedom and initiative.

In contemplating the problems involved there is one thing that can be done and that is in the matter of students with inadequate financial backing. Loan funds and scholarships should be available to every candidate who has demonstrated his fitness mentally and morally to enter the profession of medicine. If outstanding athletes in preparatory schools can get scholarships in our universities, it is only proper and fitting that excellent premedical and medical students should be aided in their careers.—S. I. KORNHAUSER, professor of anatomy, University of Louisville School of Medicine.

NEWS DIGEST

Runyon Fund Grants

The Harlem Hospital, New York City, and the University of Minnesota were awarded Damon Runyon Fund grants for the fourth consecutive year. Harlem Hospital was awarded $10,000 to continue tissue culture investigations of human relations, which is under the direction of Dr. Jane C. Wright.

At Minnesota, Dr. Owen H. Wangensteen, director of the second-look operation for patients with gastric colic or rectal cancer, will further his studies with the aid of a $15,000 grant.

Lederle Medical Awards

Fourteen awards, ranging from one to three years, have been presented by the Lederle Laboratories Division, American Cyanamid Company, for the year 1954. The Lederle Medical Faculty Awards are intended to strengthen the preclinical departments of medical schools in the United States and Canada by contributing to the support of the research and teaching activities of department members who have shown high performance but are not yet permanent faculty members.

The Lederle Laboratories have also made available the Lederle Medical Student Research Fellowships, to be used for summer vacation research. The amount will not exceed $600 per year for any individual and students applying must have good scholastic standing and the consent of the faculty member under whose supervision their research is to be conducted.

Growth Hormone Symposium

A three-day international symposium on the hypophyseal growth hormone, its nature and actions, is being sponsored by the Henry Ford Hospital and the Edsel B. Ford Institute for Medical Research. The symposium will be held at the Henry Ford Hospital, October 27-29. Those interested should write the program committee, Henry Ford Hospital, Detroit 2, Mich.

Proctology Awards

The International Academy of Proctology has announced its annual cash prize and certificate of merit award contest for 1954-55. The best unpublished contribution on proctology or allied subjects, in the opinion of the judges, will be awarded $100 and a certificate of merit. All entries are limited to 5,000 words, must be typewritten in English and submitted in five copies. Deadline for entries is February 1, 1955. The competition is open to all physicians in all countries, whether or not affiliated with the academy. Entries should be addressed to: International Academy of Proctology, 43-55 Kissena Blvd., Flushing, N. Y.

Urological Association

The 49th annual meeting of the American Urological Association is scheduled to be held at the Waldorf-Astoria Hotel, New York, May 31-June 3. The meeting will include scientific and technical exhibits, motion pictures and essay competition, as well as scientific reports to be delivered by members of the association. One of the features of the meeting will be the Guiteras lecture, to be delivered this year by Dr. John Eager Howard.

"Better Laboratory Planning"

A revised edition of "Better Laboratory Planning," a booklet published by the Scientific Apparatus Makers Association, has been made available.

This pamphlet includes pictures of laboratories in colleges, industries, hospitals, secondary schools and research facilities. A special section of the book is devoted to recommended bidding practices. Copies of this manual may be obtained free of charge from the Laboratory Equipment Section, Scientific Apparatus Makers Association, 20 N. Wacker Drive, Chicago 6.

National Health Council

The National Health Council has released its annual report, announcing an all-time high in membership and plans for continuing its services to health organizations. The highlight of the past year was the National Health Forum, held in New York on March 24-26, around a theme of "Changing Factors in Staffing America's Health Services."

Tobacco Research

The Tobacco Industry Research Committee has invited university, hospital and other medical research organizations throughout the nation to submit proposals for specific cancer research projects for consideration by the committee's scientific advisory board. An initial fund of $500,000 for research has been appropriated by the committee, which is composed of major cigarette manufacturers, tobacco growers and warehousemen.

World Health Assembly

The Seventh World Health Assembly, attended by delegations from over 70 countries, recently concluded its three-week session in Geneva, under the chairmanship of Dr. Joseph Togba, director-general of the National Health Service of Liberia.

The assembly raised the regular budget of the World Health Organization by $1 million to $9,500,000 to be spent in 1955. It was decided that $5 million of this budget would be spent on advisory services to governments to help them combat communicable diseases, stimulate programs for the general promotion of health, and train medical and auxiliary personnel.

Next year's session will be held in Mexico. Except for the second assembly which was held in Rome in 1949, all meetings of the world health body have been held at Geneva.

College Briefs

University of Cincinnati

Retiring at his own request after 41 years of service in the department of surgery, Dr. L. HOWARD SCHRIVER was honored at a testimonial dinner recently by his friends and associates. Dr. Schriver joined the faculty in 1913, and since that time has taught more than 3,000 students. He is also a former president of the Ohio State Medical Association.

Dalhousie

Dr. CHESTER BRYANT STEWART has assumed his duties as dean of medicine. He was to have succeeded Dr. H. G. GRANT on June 1, but Dr. Grant's death early in May moved the date of his appointment forward. Dr. Stewart was formerly professor of epidemiology.

Duke

Dr. SUSAN C. DEES and Dr. JAY M. ARENA, associate professors of pediatrics, have been elected members of the American Pediatrics Society.

Emory

The school of nursing has received a grant of $10,350 from the Commonwealth Fund to be used in setting up a graduate program in nursing. The program will offer a one-year course leading to the degree of master of nursing. The first students will be admitted in the fall of 1955. MARY MARGARET WILLIAMS has been named director. The grant will be used for student fellowships and for seminar expenses in the 1954-55 academic year.

Georgetown

Dr. THOMAS F. KELIHER, clinical associate professor of medicine at the medical center, received the Bene Merenti Medal at the university's 155th annual commencement on June 7. The medal is awarded annually in recognition of outstanding service to the school.

George Washington

A $52,624 Public Health Service grant has been awarded to the university for use in expanding its cancer research program.

The funds will be used for clinical and laboratory studies dealing with the development and use of new drugs for treating cancer, with initial emphasis on lymphoma and leukemia. Dr. LOUIS K. ALPERT, who has recently been appointed clinical professor of medicine, will direct the new research program. Dr. PAUL K. SMITH, professor of pharmacology, will be in charge of the pharmacological and chemical aspects of the program.

Five second-year students have been awarded student fellowships by the National Foundation for Infantile Paralysis. The fellowships are for the current summer and are designed to help the students determine their abilities and aptitudes.

Harvard

Dr. STANLEY COBB will retire this summer as Bullard professor of neuropathology at the medical school, and as chief of psychiatry service at the Massachusetts General Hospital.

Dr. Cobb joined the faculty in 1919. He is a former president of both the American Neurological Association and the American Association of Neuropathologists, and is now president-elect of the American Psychosomatic Society.

Illinois

The awarding of 14 fellowships for graduate work has been announced. Dr. PETER H. DICKINSON, who holds a fellowship in the Royal College of Surgeons, has been awarded an $1,800 grant for a 12-month period. A $1,200 fellowship for a year of graduate study has been awarded to ANN HUNSAKER. This is the first time a fellowship has been given to a student holding only a bachelor's degree; previously only professional graduates and those with master's degrees were eligible.

In addition, 12 summer fellowships were awarded to students. Fellowship appointees are exempted from tuition fees.

The Public Health Service has awarded two grants, totaling $15,362, for research projects. A $12,500 grant will continue to support the teaching program in the field of cancer at the tumor clinic. Dr. DANELY P. SLAUGHTER will direct the program.

The department of anatomy has received $2,862 for continuance of the electron microscopic study of the glomerulus, especially its basement membrane in normal and nephritic mice. The investigation will be conducted by Dr. ARTHUR KIRSCHBAUM and Dr. PARKE H. SIMER.

Louisiana

Dr. EDGAR HULL, professor and head of the department of medicine, has been appointed associate dean. He will retain his title as professor of medicine and is succeeded as head of the department by Dr. WALTON R. AKENHEAD, who has been named professor.

Dr. THOMAS W. RICHARDS, associate professor of neuropsychiatry, was elected president of the Louisiana Psychological Association at its recent meeting.

Dr. RUSSELL L. HOLMAN, professor and head of the department of pathology, was elected president of the American Society of Experimental Pathology at the annual meeting of the Federation of American Societies for Experimental Biology.

Dr. MILTON L. MCCALL, professor and head of the department of obstetrics and gynecology, and Dr. HOWARD J. TATUM, associate professor, will read papers at the International Congress of Obstetrics and Gynecology at Geneva, Switzerland, July 26-31. Dr. Tatum recently received a renewal grant of $37,500 from the Schlieder Foundation of New Orleans to continue his research on the underlying biochemical and physiological abnormalities associated with toxemias of pregnancy.

Jefferson

Dr. JOHN H. GIBBON JR., professor of surgery and director of surgical research, was recently elected president of the American Surgical Association at its annual meeting in Cleveland. Dr. Gibbon also received the John Scott award, made by the board of city trusts of Philadelphia.

Maryland

Col. WILLIAM S. STONE has been appointed director of education and research, effective July 1. Other appointments which became effective simultaneously are Dr. THEODORE E. WOODWARD, professor and head of the department of medicine; Dr. MAURICE C. PINCOFFS, head of the new department of preventive medicine, and Dr. CHARLES VAN BUSKIRK, professor and head of the division of neurology.

Grants for research from the Frank C. Bressler Reserve Fund, totaling $40,312,84 were approved by the advisory committee of the faculty to support new research and work now in progress in the medical school.

Dr. ROBERT G. GRENELL, assistant professor of psychiatric research, received three grants totaling $103,389. These grants came from the Air Research Development for research and reports on intraneuronal chemical changes in anoxia; from the Public Health Service to study the effect of low oxygen on cerebral metabolism and function and from the office of naval research for work on the effects of anoxia and related physiological states on neuronal structure and function.

Dr. ENOCH CALLAWAY JR., instructor in psychiatry, received a research career grant of $75,600 from the Public Health Service for the continuation of training and research on the relation between autonomic activity and human behavior.

Dr. RUSSELL S. FISHER, professor and head of the department of legal medicine, received a grant of $24,465 for studies of morphological effects of chemicals and mechanical trauma on the nervous system.

Medical Evangelists

The department of entomology of the school of tropical and preventive medicine has received a grant of $10,000 from the Army for a study of control of plague vectors under field conditions. This brings the total research funds granted to the insecticide research to $86,400. RAYMOND RYCKMAN is director of the project.

The United Cerebral Palsy Association of Los Angeles County has renewed grants to the pediatrics department totaling $31,000. The funds will cover the cerebral palsy prenursery school and cerebral palsy counseling service. Dr. ROBERT CHINNOCK, associate professor of pediatrics, will be in charge of the funds.

Dr. ROGER W. BARNES, professor of urology, recently returned from a five-month, round-the-world tour of medical institutions operated by the Seventh Day Adventist church. Dr. Barnes demonstrated urological and surgical techniques during his visits to hospitals in Bolivia, Iraq, India, Japan, Korea and Australia.

Missouri

Dr. JOSEPH E. FLYNN, formerly associate professor of pathology at the Columbia University College of Physicians and Surgeons, has been appointed professor and chairman of the department of pathology. He replaced Dr. M. PINSON NEAL as chairman of the department. Dr. Neal will continue as professor of pathology.

NYU

A grant of $500,000 from the Murry and Leonie Guggenheim Foundation will be used to establish an institute of dental research as part of the college of dentistry. The institute will be located in a seven-story building owned by the university at 339 E. 25th St., which will be vacated by the state health department this summer.

Dr. ALFRED KESTENBAUM, a faculty member of the New York University—Bellevue Medical Center's postgraduate medical school, represented the United States at the 19th International Congress of Oto-Neuro-Ophthalmology in Sao Paulo, Brazil, in June.

North Dakota

Dr. GEORGE W. STARCHER has succeeded Dr. JOHN C. WEST as president of the university. Dr. Starcher was formerly dean of the college of arts and sciences at Ohio University. He received his A.B. degree from Ohio University, and his A.M. and Ph.D. degrees from the University of Illinois.

Oberlin

A four-man research team is beginning a study on the preparation for medical education in a liberal arts college, supported by a grant of $5,500 from the Commonwealth Fund of New York.

The research team will visit 25 medical schools where Oberlin graduates have studied in the past decade, to compare the experiences of students in medical schools as they relate to their undergraduate programs. The team will consist of WILLIAM B. RENFROW, professor of chemistry, WARREN F. WALKER, professor of zoology, W. BLAIR STEWART, dean of the college of arts and sciences, and ROBERT E. DIXON, assistant dean.

Oregon

The National Foundation for Infantile Paralysis issued a grant of $28,593 to the medical school late in April to support the serological tests connected with the Salk polio vaccine field trials in Oregon and Idaho.

Dr. ARTHUR W. FRISCH, professor of bacteriology, and four assistants will work during the next several months to determine the antibody count in the blood samples of children before and after vaccination. The bacteriology department also will run special blood tests on, and isolate viruses from any vaccinated children who may contract polio this summer, and will make similar tests on members of the children's families.

Dr. ARTHUR J. SEAMAN, associate professor of experimental medicine, has been awarded a Fulbright fellowship for a year's study and research at the University of Oslo, Norway. Dr. Seaman will study under Dr. PAUL OWREN, professor of medicine on a project on blood coagulation, particularly the body mechanisms which initiate blood clotting.

Dr. Seaman will also attend the fifth international congress of the International Society of Hematology at the Sorbonne in Paris, September 6-12.

Dr. OSAMU MIURA, professor and head of the dermatology department at the Nithon University College of Medicine, Tokyo, visited the medical

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in viral infections, marked clinical improvement, smooth convalescence, and an early return to normal activities may be anticipated following the administration of CHLOROMYCETIN. Striking clinical responses have been reported in viral pneumonia, psittacosis, and certain other serious conditions caused by large viruses.

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school recently. He discussed research work in pigmentation being conducted by Dr. THOMAS B. FITZPATRICK and Dr. AARON B. LERNER of the dermatology division.

Pennsylvania

On July 1 the new institute of neurological sciences began operations. This institute was founded to provide a center for basic training in the various disciplines of neurological science. The institute will be administered by Dr. LOUIS B. FLEXNER, professor and chairman of the department of anatomy, who has been named director. He will have five assistants, and a consulting staff of 17 physicians who are members of the faculty of the medical school and college.

A number of fellowships, ranging from $1,200 to $1,800, are available for graduate students accepted by the institute.

South Dakota

Dr. FRANCES O. KELSEY of the department of pharmacology has received a Lederle Medical Faculty award of $22,500, covering a period of three years.

Mississippi

Dr. RAY J. NICHOLS, director of admissions and secretary to the faculty of the school of medicine, died on May 12. A medical scholarship is being established as a memorial to him.

The work on the new medical center in Jackson is progressing and the school of medicine expects to occupy the building on April 1, 1955.

Dr. H. C. TRACY, associate in anatomy, will spend the summer at Woods Hole, Mass., doing research on the correlation of fetal movements with the development of certain elements of the nervous system.

Southwestern, U. of Texas

The state legislature recently appropriated $3,500,000 for construction of an additional building to provide teaching and research facilities for the clinical departments. In addition, there will be some expansion of basic science department facilities and provision for animal hospital and general research facilities.

The basic science building, now nearly completed, will house the classrooms, student laboratories and research facilities of the basic science departments. Also nearing completion is the $11 million Parkland Memorial Hospital, which will serve the city and county of Dallas.

Stanford

A separately organized department of psychiatry has been formed at the school of medicine in San Francisco. Dr. GEORGE S. JOHNSON, professor of medicine, has been appointed head of the new department. The reorganization was necessary, according to Dr. Johnson, to meet increasing needs of patients and to provide for expansion and research in the field.

Tennessee

A postgraduate program in emergency surgery and acute injuries will be offered by the college of medicine July 28-30, in cooperation with the John Gaston Hospital. The course will be under the direction of Dr. HARWELL WILSON, chief of the division of surgery, and will consist of ward rounds, demonstrations and lectures.

The $1,373,354 chemistry-physiology building is scheduled to be completed by October 27. The building is the first of three to be completed under a $5,000,000 expansion program. An administration-postgraduate building is under construction, and a medical-surgical building is also being built. In addition to the cost of construction, $116,500 will be spent to equip the laboratories.

U. of Texas, Galveston

Dr. G. W. N. EGGERS, professor of orthopedic surgery, has recently returned from a six-week tour of medical installations and hospitals operating in Japan and Korea.

Dr. Isaac Costero, neuropathologist at the Cardiology Institute, Mexico, City, was guest lecturer during May and June. Dr. Costero gave a series of seminars on the origin of function of fibroplasts. He also conducted special experimentation in the tissue culture laboratory under the direction of Dr. Charles M. Pomerat.

Washington U.

Dr. W. Stanley Hartroft has been appointed Edward Mallinckrodt professor and head of the department of pathology, effective September 1. He is presently professor of medical research at the University of Toronto.

Dr. Hartroft will succeed Dr. Robert A. Moore, who resigned as dean of the school of medicine and head of the department of pathology to assume the position of vice chancellor at the University of Pittsburgh. Dr. Hartroft's special fields of research are experimental sclerosis of the liver, hypertension and arteriosclerosis.

Western Reserve

A new scholarship program has been established at the school of medicine. The Emma and Frank Binz Memorial Scholarships will be made on a four-year basis, each individual scholarship being valued at $5,500. This total represents $3,200 for tuition, $700 for a microscope and books and $400 toward living expenses. Two Binz scholars will be appointed each year, beginning with the academic year 1955-56. Applications and information on the scholarships are available from the Committee on Admissions, School of Medicine, Western Reserve University, Cleveland 6, Ohio.

Audiovisual News

Utah "Kine-Klinics" Available

The University of Utah division of postgraduate medical education, in cooperation with KDYL-TV and supported in part by the W. K. Kellogg Foundation, has completed the second series of four postgraduate television clinics. These "Kine-Klinics," televised over an open-channel network, have been kinescoped in the standard manner and are available to medical societies, medical schools and television stations for use in other areas. Because postgraduate television clinics are an experiment in medical education, it is hoped that other releases of these clinics will be carried on a schedule similar to that of the original telecasts. The Utah surveys indicate that the practicing physicians in the intermountain area felt that Tuesday morning, from 7 to 8, was the best hour for televised postgraduate medical education.

All costs of shipping and preparation of kinescopes will be borne by the Utah postgraduate division, which will also handle announcements, syllabus distribution and questionnaire circulation.

Those desiring the use of these kinescopes for trial use may write to Dr. Robert S. Warner, director, Division of Graduate and Postgraduate Medical Education, University of Utah College of Medicine, Salt Lake City.

TV Film Directory

A directory of non-royalty films for television, listing nearly 3,000 films available to TV stations may be obtained at $6 a copy from Iowa State College Press, Press Building, Ames, Iowa.

"The Lymphatic System" Rated

This is the second in a series of reports on AV materials circulated on the preview circuits for medical colleges. The following information is taken from 130 appraisal forms returned by the time of writing by the 76 medical colleges on the circuits.

A total of 630 faculty viewers and 2,528 student viewers were reported on the appraisal forms as having seen the film, "The Lymphatic System" (see The Journal of MEDICAL EDUCATION review, October 1953). The film was given the following overall ratings: poor, 9; fair, 18; good, 64; excellent, 35; no indication, 4.

It was considered by the previewers for the following teaching areas, in order of frequency: anatomy, 49; physiology, 39; surgery, 9; others, 17.

The appraisers indicated that the film was best suited for the following audiences: medical students, 110; interns and residents, 28; postgraduates, 33; other, 35.

The appraisers were asked if this film should be a part of their college library. Forty-four said "yes," 43 said "no," while 43 said it was questionable. To the question: "Is this a film which you will want to rent from time to time?", 64 said "yes," 23 said "no," while 43 said it was questionable. It must be pointed out that many of the previewers who thought the film should be a part of their college library also indicated that they would want to rent the film from time to time, presumably because they would be unable to buy it.

The comments varied. There were those who criticized the slowness of pace and those who considered it a strength. Favorable comments include the following as representative: "Deliberately slow and emphatic, commendably so;" "Scientifically, didactically and photographically it represents one of the best we have ever seen;" "General opinion was that it was all-inclusive, original and refreshing. Presented a dynamic and functional approach, was an excellent review for second- and third-year students and fitted in as a superior integral teaching presentation for the first year students since it is hard to find lymphatics generally in the embalmed cadaver;" "Shown promptly to freshman anatomy group of 150 as review of lecture of week before." With respect to an omission in the film, one appraiser stated: "I liked the absence of music. I like my Bach and Brahms straight!"

Representative "weaknesses" of the film included: "Too much repetition of manipulative things which do not add to the knowledge of the audience, such as making incisions, inserting cannulae, etc.;" "This should be less detailed and more comprehensive;" "At least five terms are given a pronunciation not in common use in this country and are thereby distracting." There was a limited number of complaints about the lack of an overall summary.

Distribution: Imperial Chemical Industries Film Library, 521 Fifth Ave., New York 17, N. Y. **Rental:** $8 for three days, $16 for one week. Not available for sale.

Film Bans Barred

An international agreement sponsored by UNESCO eliminating tariff and trade restrictions on the circulation of educational films, filmstrips, sound recordings and other auditory and visual materials will come into operation within 60 days. The agreement grants exemption from all customs and quantitative restrictions, and from the necessity of applying for an export license.

To qualify for the benefits of the agreement, the materials covered must be certified by the producing country to be of an educational, scientific or cultural character. UNESCO is to publish catalogues of all certified materials.

A-V Coordinators Workshop

A workship of midwest medical school audiovisual coordinators will be held on August 2 in Chicago. The conference will use facilities in the Conrad Hilton Hotel provided by the National Audio-Visual Association during its annual trade show and convention. Seven or eight national AV associations meet at this time. The trade show will have approximately 150 audiovisual displays.

A preliminary survey among the midwest coordinators reveals that they are most interested in the following topics:

1. What are the trends in "audio-visual" medical education?
2. By what means may the medical school teacher integrate the use of AV materials to increase his teaching effectiveness?
3. What should be the relationship between the AV coordinator and other staff members?
4. How should the medical school budget for the use of AV materials?
5. How is a central file of information best developed and adapted for the use of the AV coordinator and the school?

Summaries of Film Reviews

Use of Whole Blood, Plasma and Concentrated Serum Albumin with Special Reference to Shock

13 min., sd., color, 16 mm., 1952.

A long roll title discusses shock. Combat wounds of many kinds are indicated to provide many causes of shock. The circulation is shown in animation. A chart of blood fractions presents a range of selection for treatment of shock. The early signs of shock are indicated and the vicious cycle of shock development is symbolized by an animated diagram. The three shock treatment agents are shown: whole blood, plasma and serum albumin. Shock following burns, research on blood expanders and the conservation of whole blood are mentioned before a summary emphasizing the urgency of shock treatment.

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10 mg.
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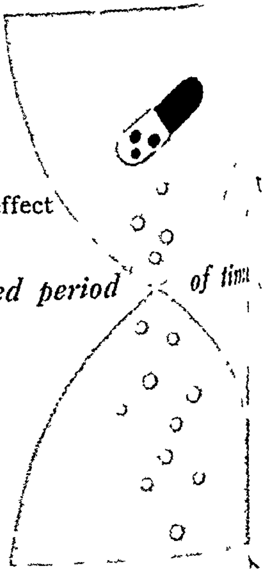

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a balanced combination of dextro-amphetamine sulfate, S.K.F., and amobarbital

for continuous and sustained mood-ameliorating effect

sustained release of medication over a prolonged period of time

Eskabarb* Spansule[†]

1 gr.
&
1½ gr.

phenobarbital, S.K.F.

for continuous even sedation with phenobarbital throughout the day—or night

New

Teldrin* Spansule[†]

8 mg.
&
12 mg.

chlorprophenpyridamine maleate, S.K.F.

for continuous and sustained antihistamine effect

Benzedrine* Sulfate Spansule[†]

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amphetamine sulfate, S.K.F.

for day-long relief of psychogenic tiredness

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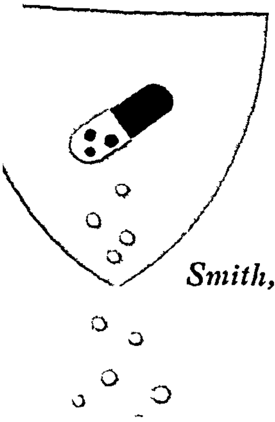
Both dosage strengths are designed to have the same duration of effect. The difference is in the intensity of effect. To determine optimal dosage for an individual, begin with one 'Dexamyl' *Spansule* (No. 2) capsule daily —taken on arising or at breakfast. Response to this dosage will be the best guide to subsequent administration.



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This illustrated lecture on shock and its management covers many points of an ever-changing controversial scientific development. The more modern concepts of shock etiology are avoided, but the vicious cycle pattern is helpfully sketched. The film's structure is entirely verbal; the cinematography and animation are ineffectual fragments designed to be foils for the sound track.

For the medical corpsmen for which the film was made, the film's deficiencies will perhaps be less obvious. However, for medical professional personnel the film's superficiality and poor story form will militate against any effective teaching use. This is a talk-talkie, with little to commend it.—*D.S.R. and G.V.B., for MEND Program, February 1954.*

Audience: Medical corpsmen.

Production Data: Sponsor: Bureau of Medicine & Surgery, U. S. Navy Department; **Producer:** Film Graphics, Inc., New York, N. Y.

Distribution: Chief, AV Training Aids Section, Bureau of Medicine & Surgery, U. S. Navy Department, 23rd & E Sts. N. W., Washington, D. C., **Loan:** (use Code No. MN-7335).

Infectious Hazards of Bacteriological Techniques

57 min., si., color, 16 mm., 1950.

The danger of infectious bacterial aerosols to laboratory personnel is stressed. The method of sieve type air sampling is demonstrated; *Serrati indica* is the test organism. The production of aerosols by various means of shaking, and their release by removal of stoppers or cotton plugs is tested for common laboratory containers. Accidental touching of containers by transfer loops; effects of pipetting including blowing out of last drop; the effect of culture medium bubbles following shaking; pouring cultures from container to container; syringe and needle transfers from rubber-stoppered vaccine bottles; the use of a blender for grinding up of infected tissues (liver) in broth—all are demonstrated with their plate culture results. Conclusion: bacteria-laden aerosols are produced during many accepted bacteriological techniques.

This long report film of important investigations into routes of air-borne laboratory infections is laboriously repetitive, as is necessary in partially documenting research for the critical examination of other scientists. However, its inadequate color quality, great length partly accounted for by titles and repetition of action and data make the film unsuited for all but graduate study. The film is a provocative visual document of high research value. The high speed cinematography of aerosol development at the tip of a hypodermic needle is singularly illustrative. However, for student teaching the Public Health Service films on the same subject should be compared for relative efficiency of teaching time. *D.S.R. and G.V.B., for MEND Program, February 1954.*

Audience: Bacteriologists, pathologists, workers in public health.

Reference: Sulkin & Pike, New Eng. J. Med., 241, 205-13, 1949.

Production Data: Producer-Author: biological department, Chemical Corps, Camp Detrick, Md.

Distribution: Committee on Materials for Visual Instruct [illegible] Society of Americar [illegible] Harry E. Morton, [illegible] ology, University of Pennsylvania School of Medicine, 36th and Hamilton Walk, Philadelphia 4, Pa., **Service Charge** in addition to transportation charges.

Disaster Anesthesia (Open Drop Ether*)

25 min., sd., color, 16 mm., 1953

An introduction by Dr. Andrew C. Ivy on the 330,000 nonfatally injured victims of a single hydrogen bomb precedes scenes of war casualties. Open drop ether for general anesthesia and novocaine for local anesthesia are advocated for disaster situations. The properties of ether are demonstrated. Coma, shock, blast, head and thoracic injuries are shown to be ether contraindications. In an improvised OR a patient with leg injury is prepared and examined preoperatively, preoperative medication is discussed and IV morphine is administered. Ether mask and drip cans are improvised; rubber tube airway and the simple instruments of open drop ether administration are displayed. The anesthetist induces anesthesia. The signs of the stages of anesthesia are demonstrated, emphasizing respiratory movements, use of the nasal tube in the third stage and constant check of total patient condition. In stage-four anesthesia, artificial respiration is employed. Emergence from anesthesia on the table precedes vigil in the ward until the patient is fully awake. A summary emphasizes supervision, patient evaluation, breath to breath dosage of ether and proper aftercare.

This useful teaching film features the performance of a clearly competent anesthesiologist and a narration full of useful hints and excellent generalities. That the narration is lecturish and many of the scenes less than excellent in quality are minor considerations in the face of the overall practical values of the film's content. The author-narrator is good, the cinematography probably adequate for the film's function, although color might be greatly improved and direction could well have been more perceptive.

For its audience, all those who might in time of disaster be pressed into service as anesthetists (medical students, nurses, dentists), this film seen once, or more than once, with or without competent discussion guidance, will go far toward preparing such potential workers for tasks which we pray may never come. *D.S.R. and G.V.B., for MEND Program, February 1954.*

Audience: Medical students, dentists, nurses.

Production Data: Sponsor: E. R. Squibb & Co., New York, N. Y.; **Author and Narrator:** Max S. Sadove, M.D., department of surgery (anesthesiology), University of Illinois College of Medicine, Chicago, Ill.; **Anesthesiologist:** Lloyd Gittelson, M.D.; **Producer:** Scientific Film Company, Merrill J. Shepro, D.D.S., Berwyn, Ill.

Distribution: Film Library, E. R. Squibb & Company, 545 Fifth Ave., New York 22, N. Y., **Loan and Sale.**

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*Our addition.

Artificial Respiration

The Back Pressure Arm Lift Method.

20 min., sd., b&w., 16 mm., 1953.

After an introduction concerning the causes of respiratory arrest, an ostensible drowning victim is carried from the waves and the rescuer speedily positions the victim's body, places his own legs and hands and begins a rhythmic back pressure arm lift routine. The rationale of artifical respiration is shown in animation. For the operator vocal rhythm and leg-knee change are demonstrated. The chest pressure arm lift alternative method is shown. For arm injury cases the back pressure hip lift and the Schafer prone pressure methods are briefly performed. Changing operators, blanketing of the victim to stave off shock, management of the patient during recovery and removal to competent medical care are illustrated. A summary demonstrates all key points.

This excellent teaching film covers analytically and well the currently recommended methods of artificial respiration, and briefly presents the alternative procedures without raising confusing side issues. Production is professionally skillful, visually and verbally informative, and any criticisms are very minor.

For all classes in first aid and artificial respiration this film is superior. Repeated showings even in the absence of trained instructors will be very productive. Superior training results are to be expected with all groups who employ this film. *D.S.R. and G.V.B., February 1954.*

Audience: First aid groups, medical students.

Production Data: Sponsor: Bureau of Medicine & Surgery, U. S. Navy for the Armed Forces; **Producer:** Audio Productions, Inc., 630 9th Ave., New York, N. Y.

Distribution: Chief, AV Training Aids Section, Bureau of Medicine & Surgery, U. S. Navy Department, 23rd & E Sts., N. W., Washington, D. C., **Loan.**

Diagnosis of Enterobiasis

38 frames, si., b&w., 35 mm., F.S., 1950.

Enterobius vermicularis (pinworm) infections are shown to have a very high incidence. From the cecum and ascending colon the mature females migrate to the anus to deposit eggs on the perianal skin. Ineffective diagnostic procedures have been replaced by a modified Graham method (cellulose tape strip, slide and tongue blade) designed to pick up eggs from the perianal region for microscopic identification. Examination kits are available from state health departments.

This filmstrip covers the accepted modern diagnosis of pinworm infections, focussing upon the CDC modification of the Graham cellulose tape method for discovery of ova. One might question the relative incidence of enterobius and trichinella quoted as being based on different criteria of judgment. But fact and method are alike neatly assembled in a titled filmstrip which is simple and proficiently organized for teaching, and of handsome graphic rendering.

For all students of medical parasitology, pediatrics and medical technology this direct and simple message is effectively conveyed.—*D.S.R., February 1954.*

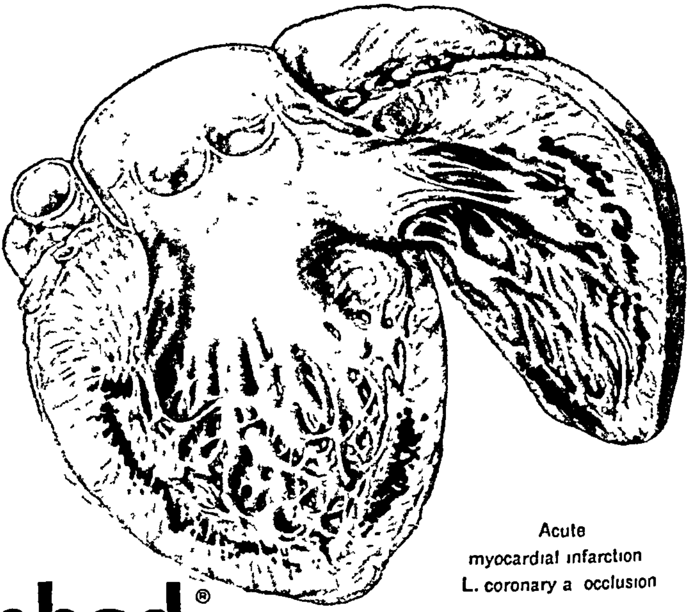
Audience: Students of medicine, medical technology, practitioners.

Production Data: Sponsor-Producer: Communicable Disease Center, Public Health Service, U.S. Department of Health, Education and Welfare.

Distribution: Communicable Disease Center, Public Health Service, Box 185, Chamblee, Georgia, **Loan:** United World Films, Inc., 1445 Park Ave., New York 29, N.Y., **Sale:** $1.00 (Use Code No. 5-164)

—in the severe shock

secondary to myocardial infarction



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1. Gazes, P. C, Goldberg, L. I., and Darby, T. D.: *Circulation*, 8: 883, Dec, 1953
Levophed bitartrate, brand of levarterenol bitartrate

Book Reviews

Criteria for Retirement

Geneva Mathiasen, editor, G. P. Putnam's Sons, New York, 1953. 222 pp. with appendix.

This small volume summarizes the discussions and includes some of the material prepared in advance for the first National Conference on Retirement of Older Workers, sponsored by the McGregor Fund and a committee of the National Welfare Assembly, and held for three days in January 1952. It was attended by about 80 people representing a very broad range of interests. The primary purpose was to categorize and clarify the problems which we must face in this field, and thus to stimulate experimentation and research.

Whatever the effect of the conference on those in attendance (and there is evidence that it was stimulating), this book seems unlikely to stir anyone to action. It is deadly serious, and makes the subject rather forbidding by emphasis on the unpleasant complexities of the situation, rather than the opportunities for intellectual exercise and constructive action and the richness of resources which our country offers.

Teachers in medical schools will find in it a good collection of facts and informed opinion to back up the general knowledge which most of them already have. Three monographs prepared for the conference by a University of Pittsburgh public health group, by Harland Fox of the University of Minnesota industrial relations center and by Sumner Slichter of Harvard, are of particular value.

Rodney R. Beard, *Stanford*

Medical Progress, 1954

Morris Fishbein, editor. The Blakiston Company, New York, 1954. 331 pp. $5.

This is a book which should have a legitimate appeal to busy practitioners and to physicians of any specialty who desire to be apprised quickly of the recent advances in medical science.

While sharply condensed in substance, the contents cover a wide range of material. Some chapters utilize disease subjects, others vary the form by utilization of organs, anatomical regions and body tissues in their presentation. In a general way, each chapter deals with the latest physiological concepts of etiology, followed by recent diagnostic procedures and treatment.

The style of the editor is greatly in evidence, but enough of the individuality of the various authors is permitted to provide an interesting variety of rhythm to the reading of the book. Also the reference index at the close of each chapter provides easy access to further exploration of the subject if desired.

Those chapters on surgery, gastroenterology and gynecology are particularly well presented. The short review of newer drugs with their action and uses enhances the interest for the reader. It is noteworthy to recognize the emphasis which certain diseases and treatments have made upon the minds of the various authors; for instance, retrolental fibroplasia is discussed within the chapters on nutrition, endocrinology and ophthalmology and the cortico-steroids quite naturally, perhaps, enjoy the widest and most diversified field for consideration and use.

Evidently with the thought in mind of this book's ephemeral appeal, the publishers have not extended themselves to present an appearance of high quality in the production of this volume; nevertheless, "Medical Progress" represents one of the best compendiums of its kind thus far presented to the profession.

Practical Electrocardiography

Henry J. L. Marriott. The Williams and Wilkins Company, 1954, 159 pp.

Generally speaking, this *manual* which is designed to approach *electro*cardiography from the point of view of the clinician, is well-organized and simply stated. Unfortunately, when an attempt is made to simplify electrocardiography, the reader is left with a host of electrocardiographic patterns for which there is not a given physiologic basis. This lack of fundamental concepts makes one rely upon given pat-

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terns for diagnosis rather than emphasizing the fact that most electrocardiographic interpretation can be made if the fundamental underlying mechanisms are understood.

Other than this criticism, there are a few more points which should be made. Generally speaking, the reproduction of tracings is not as clear as the reviewer would like. Also, there is a variance in the size of the tracings, some being full size, while others are less than full size. Although this will not bother a reader who is experienced in electrocardiography, it is likely to be confusing to the beginner.

Early in the text, a method for determining heart rate is given which depends upon the fact that each beat be equally spaced. Such shortcuts may lead to great inaccuracies. Occasionally, terms are used which are not explained until later; for example, in figure 18 on page 39, heart position is mentioned, whereas an explanation for this is not given until the unipolar leads are discussed in the last chapter. Frequently, examples are given in which the leads are not numbered. Although in many cases this is not absolutely essential, it would be nice to better orient the beginner as to the general contour of the tracing in each lead. The usefulness of mnemonics in such a field as electrocardiography is to be questioned. It would seem better to understand more fully the underlying reasons for the changes in the electrocardiogram, rather than using the mnemonic quoted on page 106, namely, "anterior before posterior, one before three." In the discussion on hypokalemia on page 146, it is mentioned that the T wave is broad and indeed in figure 107, one is asked to observe "the wide camel-hump T waves in leads V 2-4." Might this not better be expressed as an emphasized U wave as mentioned by Surawicz and Lepeschkin in the December 1953 issue of *Circulation?*

Despite the drawbacks mentioned above, this text should be useful to the student when teamed with a more basic discussion of electrocardiography and to the clinician who already has the knowledge of the fundamental physiology involved.

Robert G. Page, *U. of Chicago*

This book is meant to be an outline for training of medical technologists and not a textbook. In the introduction the author defines medical technology and orients the medical technologists, not only in relation to the pathologist but also to the Registry of Medical Technologists. The latter encompasses the purposes of the registry, methods of administration, an outline of eligibility, certification and code of ethics of the medical technologist.

The actual curriculum is divided into sections, each with a recommended number of weeks and selected references to textbooks, monographs and periodicals. It includes urinalysis and clinical microscopy, five weeks; basal metabolism, two weeks; electrocardiography, two weeks; hematology, eight weeks; histologic techniques, four weeks; pretransfusion tests and blood bank procedures, four weeks; clinical chemistry, 13 weeks; bacteriology and parasitology, 12 weeks and serology, four weeks. The book ends with a chapter on examinations, another chapter on audiovisual teaching aids and an appendix containing an outline for student evaluation.

The book is clearly written, concise and certainly authoritative. It will be of inestimable value to the prospective technologist and to the instructor as well. It is a must in every laboratory that has anything to do with the training of technicians.

Peter A. Herbut, *Jefferson*

Cold Injury

Transactions of the Second Conference. Edited by **M. Irene Ferrer.** Josiah Macy Jr. Foundation, New York, 1954. 242 pp. $4.

The conference on which this book is based brought together research workers and guests from departments of medicine, radiology, biophysics, internal medicine, physiology, pharmacology and surgery. The members of the conference were chosen because of their basic research interest in the physiological and pathological effects of cold. This book, along with an earlier one based on the first conference, summarizes recent research on the problem of cold.

The epidemiology of frostbite received the greatest attention in the second conference. Other topics discussed included the relation of ascorbic acid and cold, pathophysiology of cold injury and suggested areas for future research and conferences. All chapters are excellent in terms of providing research leads.

The book is interesting throughout. It presents not only the methods and techniques currently employed in research on cold, but gives the thinking of a group of ingenious workers. The reader "sits down" rather informally with the important workers in this area, and sees the significant problems that are involved virtually stripped of scientific jargon.

The multiprofessional conferences sponsored by the Josiah Macy Jr. Foundation are held for two purposes: (1) to stimulate research, and (2) to promote effective communication among various scientific disciplines. The conferences on cold attain both of these objectives and their summary is a particularly satisfying experience for the reader.

R.A.D.

The Biochemistry of Clinical Medicine

William S. Hoffman, Ph.D., M.D. The Year Book Publishers, Inc., Chicago, 1954. 643 pp. with index. $12.

The author has aimed this book "at the level of the general practitioner with no more than the usual training in chemistry." The discussion of the various phases of biochemistry is rather elementary and frequently somewhat out of date.

This is particularly true of the sections on carbohydrate metabolism and serum proteins. The distribution of the latter is given in a table based upon Howe's method published in 1926. The purely clinical phases are covered more adequately with rather lengthy discussion on diseases of particular interest to the author such as diabetes mellitus, Bright's disease, hepatitis, cirrhosis and gout. The manner of presentation is, for the most part, lucid. Typographical errors are few in number and are not serious. This book will have more appeal to the man in general practice who has been out of school for a number of years than to the present student or recent graduate.

Walter C. Hess, *Georgetown.*

A Manual of Tropical Medicine, 2nd edition

Thomas T. Mackie, M.D., Col. M.C., A.U.S. (retired); George W. Hunter III, Ph.D., Col. M.S.C., U.S.A., and C. Brooke Worth, M.D. W. B. Saunders Co., Philadelphia, 1954. 907 pp. with index. $12.

The first edition was published in 1945 when the authors were teaching tropical medicine at the Army Medical School. They listed six collaborators in that edition. For this edition they have 24 collaborators, 180 more pages and 20 more illustrations. The book reveals that there has been a great increase in our knowledge of tropical diseases in the past decade. The new sections include: a new classification of virus diseases and several additions to this group—rickettsialpox, Ft. Bragg leptospirosis, nocardiosis, toxoplasmosis, kwashiorkor, tropical macrocytic anemia, epidemic hemhorragic fever and medically important mollusks. As in the first edition, the problem of bibliographical references has been avoided by making no references to individual authors in the text and merely giving a list of source books under "acknowledgments."

Many of the sections have been partly rewritten to add new knowledge, and the chapter on the effects of heat has been entirely reorganized. However, one is struck with the fact that in many instances the military aspects of individual diseases as brought out in World War II are not mentioned. The excellent life cycle diagrams which emphasize epidemiology constitute important teaching material. The text is necessarily brief on epidemiology, clinical manifestations and prophylaxis, but in general gives the important facts. In the prevention of malaria the residual house sprays are described, but the results of this procedure on the incidence of malaria in many areas is not mentioned, nor is the virtual disappearance of indigenous malaria in the United States.

In therapy most of the latest approved agents are given and the chapter on drug therapy in helminthic infections is excellent. In the treatment of amoebiasis there is an error in the daily dosage of chiniofon (0.75 instead of 3.0 grams), and chloroquine, I think unwisely, is advocated for the treatment of acute amoebic dysentery.

The book is printed on heavy, glossy paper which allows ideal reproductions of photographs, including those of helminth eggs which replace the drawings of the first edition. The only editorial errors detected were in certain page references to treatment, probably due to the expanding of the text. Only one typographical error was found.

The authors, collaborators and publishers are to be congratulated on a fine product which will be of great value to medical students, practitioners and parasitologists.

Henry E. Meleney, *Louisiana*

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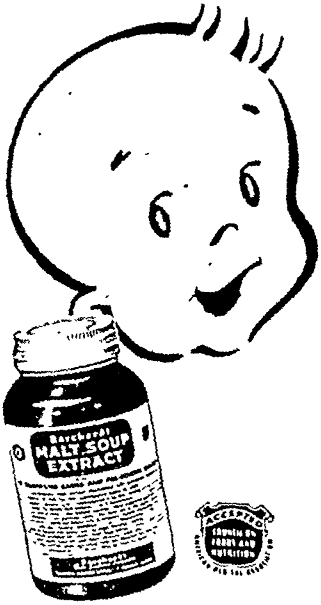

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[1] Cass, L. J. and Frederik, W. S.: Malt Soup Extract as a Bowel Content Modifier in Geriatric Constipation. Journal-Lancet, 73.414 (Oct.) 1953.

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Transactions of the American Ophthalmological Society.

Columbia University Press, New York, 1954. 736 pp. with appendices. $18.

A complete review of the 89th annual meeting of the American Ophthalmological Society at Hot Springs, Va. in May 1953, presided over by the president, Dr. Conrad Berens; consisting of all business transacted, awards, necrology, election of officers for 1954 and the presentation of the scientific program of 21 papers.

These papers uphold the traditions of the society to present the best and latest in ophthalmology by outstanding ophthalmologists and with the critical discussions by leading specialists in America and from foreign countries make this volume interesting and valuable.

Six candidates submitted their theses for membership in the society. These papers are well written and show intensive study and thought and range from "a mass report of ophthalmic survey in a southern state," to the highly technical role of "pseudo-exfoliation of the lens capsule in the production of glaucoma capsuloculare."

The highly prized Howe medal was awarded to Dr. Alan C. Woods of Baltimore, the director of the Wilmer Institute.

Dr. W. L. Benedict of Rochester, Minn., was elected president for 1954. The book will be a welcome addition to the ophthalmologist library.

W. Eugene Matthews, *Georgia*

Books and Pamphlets Received

(As space permits, those with the greatest interest to our readers will be reviewed)

Clinical Psychiatry

Ian Skottowe, M.D. McGraw-Hill Co., Inc., New York, 1954. 382 pp with index. $8.75.

Pharmacologic Principles of Medical Practice

John C. Krantz Jr. and C. Jelleff Carr. The Williams & Wilkins Co., Baltimore, 1954. 1150 pp. with index. $12.

Microbes and You

Stanley E. Wedberg, Ph.D. The Macmillan Company, New York, 1954. 416 pp. with index. $4.50.

The Microtomist's Formulary and Guide

Peter Gray, Ph.D. The Blakiston Company, Inc., New York, 1954. 680 pp. with index. $10.50.

The Macmillan Medical Dictionary

Sir Cecil Wakely, Bt., editor. The Macmillan Company, New York, 1954. 471 pp. $6.95.

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The Personnel Exchange

Faculty Vacancies

• The Creighton University School of Medicine requires the services of a full-time teacher in the area of PREVENTIVE MEDICINE and PUBLIC HEALTH. Requirements: M D. and a M.P H., or equivalent. Write details to Dr. F. G. Gillick, dean, Creighton University School of Medicine, Omaha, Neb.

• PHARMACOLOGIST: Combined department of physiology and pharmacology has opening for assistant or associate professor to take charge of teaching program in pharmacology. Time and facilities for research available. Requirements: M D. or Ph D. degree with at least 3 years of postgraduate academic experience. Direct inquiries to Dr. J. Raymond Johnson, director, department of physiology and pharmacology, Creighton University School of Medicine, Omaha, Neb.

•PEDIATRICIAN: Desired for half-time position as instructor for clinical clerkship program. Will assist in obtaining private practice opportunity for half-time not devoted to teaching. Address: V-17.

• OPHTHALMOLOGIST: Residency available in ophthalmology at Vanderbilt University School of Medicine. For details address Dr. Henry Carroll Smith, 630 Doctors Building, Nashville 3, Tenn.

• OBSTETRICS—GYNECOLOGY: Professor and chairman of combined department, now under part-time professor; university desires to establish full-time department. Well-trained academically oriented man of approximately 40 years of age desired. Address: V-18.

• INTERNIST: Board certified or qualified desiring full-time academic career with excellent advancement opportunity. Should be interested primarily in clinical teaching and administration. Write Dr. Harold N. Neu, director of dept. of medicine, Creighton University, Omaha, Neb.

• FELLOWSHIP—CHILD PSYCHIATRY: Candidates must be M.D.'s with basic psychiatric or pediatric training. In addition to the clinical experience, the fellow in training will be encouraged to take certain academic courses which, if desired, can lead to acquisition of either a M.S or Ph D. degree. Write to Dr. Reynold A. Jensen, office of the medical director, University of Minnesota, University of Minnesota Hospitals, Minneapolis, Minn.

• CHILD PSYCHIATRIST: Joint appointment in department of pediatrics and psychiatry. Ample opportunities for research and teaching. Rank and salary depend upon qualifications. Staff and service of department will be expanded considerably in near future Write to Dr. Reynold A. Jensen, office of the medical director, University of Minnesota, University of Minnesota Hospitals, Minneapolis, Minn.

• RESEARCH DIRECTOR: To develop an active research program for the Saratoga Spa at Saratoga Springs, N. Y. Ph.D. with experience in physiology. Knowledge of biochemistry also useful. Permanent New York State Civil Service position (G-27 with salary of $6,562-7,992). Possible appointment to teaching staff of Albany Medical College. Write: Dr. Frank W. Reynolds, Medical Director.

• PHARMACOLOGY: The University of Alberta invites applications for the position of associate professor of pharmacology, in the department of physiology and pharmacology, effective September 1, 1954, at a salary within the range of $5,250-6,250 per annum (not including cost-of-living bonus now approximatly $300), depending on qualifications Duties include lecture and laboratory courses for medical and dental students and a program of research work. Applications should include a recent photograph or snapshot, a curriculum vitae, and three references Address: Dean of Medicine, University of Alberta, Edmonton, Alberta, Can

• BACTERIOLOGY: Applications are invited for position, department of bacteriology, Hebrew University-Hadassah Medical School, Jerusalem, Israel. Duties to commence October 1, 1954. Position vacancy in grade instructor, assistant or associate professor depending on qualifications. For further information write Dr. Joseph Hirsch, Executive Secretary, Medical Advisory Board, 9 East 89th St, New York 28, N. Y.

• OPHTHALMOLOGIST: Full-time teaching and research faculty appointment. Excellent research and clinical facilities Rank and salary depend upon qualifications. Address. V-19.

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To aid in solution of the problem of faculty vacancies, MEDICAL EDUCATION will list persons and positions available, as a free service. The school, department or person may have the option of being identified in these columns or of being assigned a key number for each position listed. Mail addressed to key numbers will be forwarded to the person or department listing the request.

Information for these columns should reach the Journal office, 185 N. Wabash Ave., Chicago 1, not later than the 10th of the month preceding publication.

Personnel Available

• Surgeon: M.D., L.R.C.S. Foreign-born: naturalized. Experience includes 2 years postgraduate work in surgery and 6 years approved residency. Desires teaching-research position in medical school. Available July 1954. Address: A-99.

• Pharmacologist: Ph.D., associate professor in large medical school, fully qualified for departmental administration, desires change to responsible position. 14 years medical teaching, including organization and presentation of all phases of pharmacology courses. Active in research and in direction of graduate activities. Member of pertinent societies. Available Sept. 1954. Address: A-100.

• Bacteriologist: Ph.D., desires teaching and/or research position. Experience in teaching, research and consulting. Successful preparation of nurses, pharmacists and premedical students. At present, assistant professor. Available on short notice. Address: A-101.

• Instructor and/or Research Assistant: M.D. Japanese; American born. Age, 40. Reads, writes and speaks English fluently. Experience: 1 year residency in otorhinolaryngology; and 3 years residency in surgery at the Kyoto Prefectural Hosp. 3 years as medical lab technician at the U. S. Army Hosp. in Kyoto, Japan. 4 years as chief of E.E.N.T. department, Kushida Hosp., Osaka, Japan. Engaged in private practice since 1952. Address: A-102.

• Physiologist: M.D., associate professor, man, age 35, married. Swiss. Research for 7 years in respiration and circulation in Switzerland, U. S., England and Germany. 7 years teaching experience. Background in math, physics and chemistry. Prefers position in research or teaching for about 3 years. Publications and references. Available in autumn 1954. Address: A-103.

• Microbiologist: Desires graduate research fellowship or assistantship permitting study toward Ph.D. degree. A.B., M.S. in bacteriology plus 2 years of graduate study toward Ph.D. completed. Research experience in therapy of parasitic infections and bacterial physiology. Numerous publications and member of Sigma Xi. Presently assistant professor of microbiology in small college. Available in July 1954. Address: A-104.

• Biochemist-Physiologist: Ph.D., age 27, 3 years teaching experience, research on cellular and blood thymo-nucleic acids, relationship to stress and tumor activity. Interested in working toward M.D. degree. Address: A-105.

• Anatomist: Ph.D., 33 years old. Has taught in recognized medical school. At present executive position in pharmaceutical industry. Wishes to return to academic profession. Has taught all fields of anatomy; interested in research. References; publications. Address: A-106.

• Pharmacologist: Male, age 33. Ph.D. Minors: biochemistry and physiology. 1 year graduate teaching and research assistant. Teaching and research position with medical, dental or pharmacy school pharmacology department desired. Available immediately. Address: A-107.

• Pharmocologist: M.D., Ph.D., married. 5 years teaching experience, active in research; publications. Desires position teaching with research or research only. Address: A-108.

• Internist: Man. Age 42. M.D., Ph.D., F.A.C.P. More than 15 years experience in teaching, research and top-level administrative responsibility. Would like permanent position involving some teaching and/or clinical investigation. Address: A-109.

• Pathologist: M.D., 43, board certified in pathologic anatomy and clinical pathology. 17 years well-rounded experience in large hospital laboratory, medical school teaching and residency programs. Many scientific publications. Special interests include tropical medicine and hematology. Seeks position in foreign country, preferably in tropics. Address: A-121.

• Anatomist: Ph.D. in medical science, major in anatomy, 1954. Married. Age 31. Would like permanent teaching-research position at medical school or research institute. Extensive background in preclinical courses including pathology. 4 years teaching experience as fellow in histology and embryology in medical school. Keen interest in histochemistry and endocrinology. References. Available June 1, 1954. Address: A-110.

• Surgeon: 38, married, veteran. Diplomate of the American Board of Surgery. Training in general surgery with fellowship in tumor surgery. Background of research in biochemistry. Desires teaching position with opportunity for research; U. S. or foreign. Available July 1. Address: A-111.

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• Orthopedic Surgeon: 36; certified; university trained; M.S. (orthopedic surgery) experience in traumatic surgery and rehabilitation of severely disabled. Seeks association with diplomate and university hospital affiliation. Address: A-112.

• Physiologist—Microbiologist: Man, Ph.D., 30, veteran. 7 years experience in teaching physiology, microbiology and histology, medical school level. Member of scientific societies. Desires teaching fellowship with opportunity to work for M.D. in return for tuition and stipend. Prefer Canada or U. S. Goal—radiology. Available in fall. Address A-113.

• Pharmacologist-Physiologist: M.S., Zoology; Ph.D. expected June 1954. Experienced in pharmaceutical research, teaching experience in pharmacy during army service. Desires research and teaching position in physiology and pharmacology. Special interest in endocrinology. Member scientific societies, Sigma Xi. Publications; references. Address: A-114.

• M.D., M.P.H.; Diplomate of Board of Public Health and Preventive Medicine desires to head department of Public Health and Preventive Medicine in medical school. 14 years varied experience in field combined with teaching at undergraduate and graduate levels. Capable of integrating this subject with rest of medical school curriculum. Address: A-115.

• Internist-Cardiologist: M.D., 35, family. 7 years of university hospital training, including 4 years in cardiac laboratory. 30 publications. Certified in subspecialty. Now assistant professor of medicine. Seeking change of location. Prefers full-time permanent academic position. Address: A-116.

• Anatomist: 28, Ph.D. in anatomy. Desires teaching position at medical, dental or pharmacy school. Will consider teaching gross anatomy, histology, embryology or neuroanatomy. Chief interest is neuroanatomy. Continental U. S. school only. Available now. Address: A-122.

• Physiologist-Endocrinologists Man, 31, Ph.D. 5 years experience in teaching and research at Harvard University. Seeking full-time academic position. Extensive experience in physiology, general endocrinology, endocrinology of reproduction, human heredity, research methodology, histology and zoological sciences. Will accept administrative duties and responsibilities. Salary secondary to good future. Address A-117.

• Histologist-Histochemist: Ph.D. Harvard; young man, teaching and research experience. Publications; member of scientific organizations. Interested in obtaining teaching or research position in eastern U. S. Address: A-118.

• Laboratory Supervisor: Administrative and/or teaching position in medical technology. 10 years supervisory experience. B.S. in bacteriology. Graduate credits in biochemistry, histology and pathology. Laboratory officer, Sanitary Corps, Medical Department, U. S. Army 4 years (captain). Publications; references. Seeks stimulating position, preferably with academic affiliation. Address: A-119.

• Surgeon: 32; American Board of Surgery certified. Married. Interested in academic career; category 4; prefer job with limited private practice privileges, but will consider any full-time position without private practice allowances. Address: A-120.

• Bacteriologist: Male, 39, M.Sc., married. 5 years teaching experience in medical bacteriology and general microbiology. 12 years practical and administrative experience in public health laboratories. Desires teaching position with research opportunities or administrative positon in public health laboratory. Presently assistant professor of bacteriology. Available autumn 1954. Address: A-123.

• Biochemist-Radiochemist: Ph.D., 1952. Major in physical chemistry, minor in biochemistry. Experience in sterols, organic reacton mechanisms, small animal metabolism and radiocarbon dating. Presently engaged in research on mineral metabolism in man. Publications. Desires teaching or research position in applications of isotopes or physical chemistry to medical problems. Address: A-124.

• Internist: M.D., practicing physician, consultant in medicine and encrocrinology, interested in university position developing research study to determine the potential of measuring taste as it adapts to and reflects immediate physiologic and nutritional needs. Hospital and medical school teaching experience. Certified Am. Bd. of Internal Medicine; Am. Coll. Physicians. Address: A-125.

• Biochemist: Biochemistry-Internal medicine Ph.D., M.D., 40. Interested in medical school appointment for teaching and research. Experience in teaching, research and private practice. Particularly interested in clinical correlation of basic sciences. Address: A-126.

• Physiologist: Ph.D., male, 37, family. Experience in research and teaching mammalian physiology. Research emphasis in neurophysiology and visual physiology. Experienced in using electrophysiological techniques. Acquainted with problems and techniques of electromyography, especially as applied to human studies. Publications. References. Desires opportunity for research with or without teaching responsibilities. Available. Address: A-127.

• Physiologist: M.S., Ph. D. nearly completed, age 26, family. Interested especially in cellular physiology dealing with inorganic ions and their transfer across cellular membranes, and dealing with ultrastructure; problems relating to cell division and problems in neurophysiology. Address Hermann Rudenburg, 5479 Ellis Ave., Chicago 15.

• Physiologist: Ph.D., 35, married. Presently associate professor of medical physiology in large medical school. Fifteen years experience in teaching and research, the last seven in medical schools. Many publications in fields of nutrition, respiration, endocrinology, steroids, radioisotopes. Experienced in organization, administration, teaching. Considerable clinical experience. Will consider any location. Salary above $7000. Address: A-129.

• Physiologist: M.D., Ph.D., 35, family. Training requirements for boards in internal medicine completed. Teaching and research experience. Army service will be terminated end of 1954. Desires full-time academic position where basic science and clinical interests in teaching and research may be fulfilled. Address: A-128.

the teaching of

PHYSIOLOGY

BIOCHEMISTRY

PHARMACOLOGY

Report of the
First Teaching Institute
Association of American Medical Colleges
Atlantic City, October 19-23, 1953

EDITORIAL COMMITTEE

Julius H. Comroe Jr., Chairman
George Packer Berry, Co-Chairman
George H. Acheson
Victor E. Hall
Eugene M. Landis
Abraham White

Preface

The Teaching Institute on Physiology, Biochemistry and Pharmacology was an unusual and exciting experience for the teachers who participated; it was they who made it such. Their enthusiasm, so manifest last October at Atlantic City, augurs well for the future Teaching Institutes in the series being sponsored by the Association of American Medical Colleges to provide at the national level an opportunity for teachers to tackle jointly their problems in medical education.

In a real sense the Teaching Institute was an experiment from which new and, I am convinced, important insights were gained into what is certainly one of the major difficulties besetting medicine today: the inundation of our teaching programs by a tidal wave of facts that has submerged the medical student and has frequently obscured for him the principles of medical science. The great difficulty of getting the mass of relevant material into workable shape for the student, so that he can use it more effectively in understanding medical situations, was clearly recognized by the 136 participants—mostly teachers of physiology, biochemistry and pharmacology—who, very conscious of their students' plight, worked from breakfast until midnight, sincerely and humbly, in their search for better ways to accomplish their tasks. Naturally, none minimized the vital importance of facts. New facts will be discovered at an ever faster rate as science expands, and the continued progress of medicine will rest on this steady accumulation. The central issue concerns how best to present the vital facts and the numberless hypotheses drawn from them, to the end that each future physician can have an optimal chance for a professional *education* with its emphasis on the solving of problems and not just a chance for a vocational *training* focused on acquiring current techniques and learning facts by rote. Such physicians, even more than those graduated in past years, will have had their native curiosity stimulated, they will have been inspired to appreciate the principles of science, and they will have developed the habits of self-education necessary to carry them through a lifetime of useful service to their fellow men. At the Institute this was the goal, utopian to be sure, to which the participants addressed their efforts unremittingly.

The Teaching Institute was a "national faculty meeting" of the best kind, drawing its spirit from the candid and vigorous interchange of ideas among the 136 participants. With neither universal agreement nor disagreement, they steadfastly pursued their explorations, avoiding the easy pitfall of drawing up a set blueprint for medical education. Had the discussions at Atlantic City led to agreement on a curriculum for the three medical sciences, this would be far less impressive, far less important, than what actually happened.

What did happen? Teachers spread their problems on the table, subjected them to critical examination, explored the implications of existing programs and suggested revisions, looked into possible corrections for admitted inequities, and appraised the prospects for achieving more favorable approaches to objectives agreed upon. These teachers took home with them to their own medical schools a wealth of concepts that they had forged jointly, concepts that have since become the subject of animated discussion at faculty gatherings from coast to coast. The same diversified patterns of discussion that characterized those prevailing at the Teaching Institute are being duplicated locally. The Institute's participants are handling in many different ways their responsibilities for reporting to their associates. Some have prepared mimeographed or printed reports. Others have relied on the spoken word, meeting with departmental colleagues, with groups representing the three disciplines, with curriculum committees and executive committees, with entire faculties.

From these discussions at home there have already developed at some schools revisions of departmental teaching activities. At other schools new committees have been established to make long-range studies of teaching opportunities. How much healthier are such results as these than would have been the drawing up of standardized blueprints!

What were the principal achievements of the Teaching Institute? I summarize them as I see them:

1. In refocusing on the teaching of medicine at mid-century, the aim at the Institute was on the teaching of students rather than on the teaching of subjects. This accent makes for the best teaching, just as the doctors who treat patients, rather than diseases, practice the best medicine. At the Institute this emphasis required tempering an understandable defense of one's own discipline and of one's own cherished procedures. Such an attitude, I believe, in no way militates against the teaching of any discipline. Rather, it points up the interrelationship of all the medical disciplines as they play upon the student.

2. It was widely appreciated that a selective, rather than an encyclopedic, presentation of factual material to medical students helps them to gain a deeper insight into the nature of medicine. Here a degree of agreement approaching unanimity augurs well for the future. That there were many areas of disagreement among the teachers on the mechanisms for achieving this objective is healthy and not a bit surprising either, because they were a group of accomplished teachers. Diversity of opinion of this kind should always exist—it is the very nature of scientific inquiry and of scientific teaching.

3. It was widely recognized and repeatedly insisted upon by the most experienced teachers that experiments in medical education, like experiments in medical science, take many turns and lead to unexpected results. No single antibiotic can be used to combat all infections; no standardized schedule for administering insulin helps all diabetics; no single curriculum can serve equally well in different school environments. No curriculum can provide a final solution.

4. The Teaching Institute brought together teachers eager to discuss questions about teaching that had been tormenting them for years. For many of the participants it was a pleasant discovery, albeit not altogether a surprising one, that most of their colleagues had been similarly worried. It is so easy to criticize the way the other fellow is doing something; it is much more difficult to offer constructive alternatives. The participants had the kind of oppor-

tunity at the Institute for which many of them had been longing for years, the chance to hear not only what other teachers think about their own problems and to learn how they are attempting to solve them, but also to demonstrate how very complex indeed these problems can be. Solutions will not emerge from armchair philosophizing. The 136 participants, who became active teammates at the Institute, are certain to come up with new and more effective ways to organize their teaching. Some have already done so.

5. Last, and most important of all, the Institute brought home to the participants the conviction that the good teacher is accorded high esteem by his medical school. This belief is implicit in the very genesis of the Institute. To my way of thinking the strengthening of this concept emerges as our greatest achievement at Atlantic City. No factor contributed more to the fine spirit of candid interchange and whole-hearted cooperation than the realization by participants that teaching is considered today the primary function of medical school staff members, who all too often through force of circumstance have been obliged to subordinate their teaching to research activities.

These are imposing achievements. They contribute to the elevation of the prestige of teaching. They solidify our examination of what seems to be a difficult educational paradox: the conflict between the need to present to the student a truly formidable number of facts and hypotheses and the need that this material be presented in such a way that it will illuminate for him, and not obscure, the principles of medical science. These achievements will continue to stimulate the kind of experimentation in teaching around which can be designed better educational programs for our medical students.

In a word, the Teaching Institute demonstrated in a concrete way how the Association of American Medical Colleges is achieving its primary objective, which is, to quote from its Constitution, the "advancement of medical education."

GEORGE PACKER BERRY, *Chairman*
Committee on Teaching Institutes and Special Studies
Association of American Medical Colleges

Boston, Massachusetts
May 1, 1954

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Chapter I

Pre-Institute Organization and Planning

JULIUS H. COMROE JR.

THE CONSTITUTION OF THE Association of American Medical Colleges states that the chief aim of the Association is the "advancement of medical education." Two years ago, under the inspiring leadership of Dr. George Packer Berry, dean of Harvard Medical School and past president of the Association of American Medical Colleges, the Association formulated a long-range plan for the advancement of medical education by a series of Teaching Institutes. There had been two conferences on psychiatry and medical education in 1951 and 1952, and another on the teaching of preventive medicine in 1952, and the Association of American Medical Colleges had shared in their planning. The new plan was not for an occasional conference in interesting and important areas, but rather for a systematic, orderly examination of the whole structure of medical education by a series of Teaching Institutes. The tentative plan for these Institutes is as follows:

1953—Physiology, Biochemistry and Pharmacology.
1954—Pathology, Microbiology, Immunology and Genetics.
1955—Anatomy, Histology, Embryology and Anthropology.
1956—Medical Ecology.
1957—Clinical Teaching, including the Internship.
1958—Specialty Training and the Continuing Education of the Physician.

The Institutes were not designed to reach a single recommendation or condemnation or to approve or disapprove any single pattern of medical education. They were not designed for resolution, votes, blueprints or formulas. They were designed solely to bring teachers together for a week, to discuss teaching problems, to exchange ideas, to strengthen or to renew their enthusiasm for teaching and to reaffirm the dignity and importance of the teacher. To quote Dr. Berry, it was designed to be "the best type of faculty meeting on a national scale."

These were the announced aims of the Institutes. Nevertheless, it soon became obvious that some teachers had fears, misgivings and apprehension regarding the Institute plan. There were fears expressed regarding regimentation, the imposition of a uniform plan of teaching and the loss of academic freedom. Some teachers asked, "Are these Institutes really necessary? Is there any defect in our present system that requires a national Institute to detect and correct it?" A specific answer is that in the last half century medical education has become longer and longer and more and more complex. It has splintered into smaller and smaller specialties. Year by year, the medical student is confronted with more and more trees but is given a chance to see less and less of the forest. The enormous and rapidly growing mass of scientific fact is engulfing his opportunity for education. This is largely because the medical curriculum has grown by accretion far more than by design.* If re-

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*Berry, G. P.: "Medical Education in Transition," *Journ. Med. Edu.* 28: 17-42, 1953.

designing is desirable, this can be achieved best by careful reconsideration of the aims of undergraduate medical education—*whom* are we training and for *what* purpose—and this certainly is a function of teachers, meeting together to discuss medical education.

But the question, "Are these Institutes really necessary?", does not require an answer in terms of specific needs or problems. A better answer might be in the form of a series of questions: "Does the American Physiological Society serve a useful purpose?" "Do the American Society of Biochemists and the American Society for Pharmacology and Experimental Therapeutics serve useful purposes?" Few if any question the desirability of the spring and fall meetings of these societies, because they afford an opportunity for medical scientists to report on their investigative work and to receive new ideas and inspiration for research. Certainly medical school faculties exist just as much for the purpose of teaching future medical practitioners, investigators and teachers as for the search for new knowledge. But only occasionally is a section or symposium on teaching included in the programs of the Federation of American Societies for Experimental Biology. It seems highly desirable, therefore, to hold *teaching* institutes devoted to full-time, uninterrupted consideration of *teaching* problems. In addition, it is hoped that the Teaching Institutes might help the faculties derive as much local and national prestige from their teaching activities as from their research activities. Complete justification for the plan was found in the enthusiasm of the delegates at the end of the first Institute.

Organization of the Institute

The six Teaching Institutes were outlined by an AAMC Planning Committee which in turn appointed the Policy Committee for the first Teaching Institute (Appendix V). This latter committee included one representative of each of the following: the American Physiological Society, American Society of Biological Chemists and the American Society for Pharmacology and Experimental Therapeutics. The Survey of the Physiological Sciences, under the sponsorship of the American Physiological Society, also had a representative on the Policy Committee, and there was collaboration between the two groups.

In view of the misunderstandings occasionally existing between medical faculties and medical administrators, it is important to emphasize that the planning and policy committees made only one rule and it was that this be a *teachers'* institute and not a medical administrators' institute—that the way to solve educational problems is by faculty discussion and planning and not by edict.

The Policy Committee for the first Teaching Institute then appointed a chairman and co-chairman for the Institute (Julius H. Comroe Jr. and George Packer Berry) and chairmen for the four subcommittees (George H. Acheson, Victor E. Hall, Eugene M. Landis and Abraham White). These six constituted the Steering Committee directly responsible for the planning of the Institute. The policy and steering committees then selected the members to work on the subcommittees. The entire group of committee members—all physiologists, biochemists and pharmacologists—nominated the participants to attend the Institute. The reason for presenting these details of operation is to emphasize that although the deans, through their organization, the AAMC, had the initial idea, raised the funds to finance the Institute and contributed their wisdom in conference planning gained in three previous conferences, the pre-Institute planning and the Institute itself were completely a faculty enterprise. As it was aptly put: "The deans hired the hall for the faculties to put on a show."

Financing of the Institute

The first Institute was financed largely by a generous training grant from the National Heart Institute, National Institutes of Health, United States Public Health Service. Additional financial support came from the medical schools themselves, many of which paid some or all of the expenses of their participants at the Institute. Finally, the Association of American Medical Colleges contributed in many ways, one of the most important being the time and advice of its committees and officers and particularly of its director of studies, John M. Stalnaker.

Selection of Participants

There was considerable discussion about the number of participants and the means of selecting them. It was recognized that there would be many advantages in permitting all interested teachers to attend, just as all interested scientists may attend the federation meetings. On the other hand, the committees recognized that the success of the Institute depended upon free and open discussion, and the experience of all previous conference groups pointed to the necessity of small groups and hence limited attendance. Rather reluctantly, therefore, the committees decided to limit the attendance to 136 and to require that all participants work; i.e., no passive observers were to be allowed. The wisdom of this decision was affirmed by the participants at the end of the Institute, practically all of whom favored a small working group of 10 and found a group of 20 too large for effective communication.

However, two measures were taken to permit the indirect participation of all faculty members. One of these was a questionnaire (see Appendix I) which was distributed to all faculty members; the other was the decision that there be one participant from each medical school in the U.S.A., Canada, Puerto Rico and the Philippines who, by pre-Institute discussions in his own school, should represent his colleagues' points of view as well as his own.

The criteria for selection of participants were:

1. They must be interested in teaching medical students.
2. They must be articulate and willing to express their views.
3. They must represent different points of view.
4. They must represent different age groups.
5. They must be influential and respected within their own medical schools so that they might collect data effectively and so that their final report to their respective faculties would command attention.
6. There must be an equal representation of physiologists, biochemists and pharmacologists.

Since 96 medical schools fell within the scope of the Institute, the task was to select 32 physiologists, 32 biochemists and 32 pharmacologists, each of whom would represent the faculties of physiology, biochemistry and pharmacology in his own school. This the committee did by vote. The restriction on the total number of participants and the limitation to one participant from each school naturally excluded many teachers who could have made important contributions to the discussions at the Institute. It resulted in the selection of 91 professors and five associate professors, and in the nonrepresentation of any faculty members of assistant professorial ranks or lower at the Institute. However, the professorial group was probably the only group that could meet criterion five and the group did contain many men in the 30's and 40's.

Some committee members urged that professors with little or no interest in teaching be invited as participants-at-large in order to expose them to the stimulating effect of a large group of enthusiastic teachers; others urged that some medical students be invited as participants-at-large. Neither of these suggestions was considered possible because of the overall limitation placed upon the total number of participants. However, 11 representatives of medicine and surgery were chosen as participants-at-large to represent the viewpoints of the clinical sciences, and five deans were invited to represent the problems of medical administration.

The Pre-Institute Questionnaire

A. To Physiologists, Biochemists and Pharmacologists

In the first discussions of the committees it was recognized that a group of scientists coming to the Institute would demand facts and that the Institute might well fail without them. The committees decided therefore to collect information, both facts and opinions, before the Institute: (a) to help in the planning of agenda, (b) to bring the ideas of every lecturer, instructor, associate, assistant professor, associate professor, professor and department chairman into the conference even though he was not a participant, (c) to encourage every member of each faculty to think actively about teaching problems and (d) to assist the participant to discuss his colleagues' problems as well as his own.

It was the original intent of the committees that there should be no questionnaire but that each participant should, by individual or group conferences with his colleagues, learn the views of his faculties on all important matters However, the thirty committee members requested information on so many matters that the participant would have had an overwhelming task in collecting it. Therefore, three questionnaires were devised (see Preface, Appendix I) not only to obtain *facts* which could be tabulated for use at the Institute but also to obtain more complete comments and suggestions on important matters pertaining to teaching.* The committee members were no professionals in devising questionnaires and time was too short to analyze the reactions of diverse groups to the questions before submission to the faculty members. Therefore, the committees expected and got some vigorous reaction to the questionnaire. The answers to Question 8, "Do you believe that instruction in the art of teaching can improve an individual's teaching ability if he is not a born teacher?" were often violent. The reply on the very first questionnaire returned was explosive and depressing; it was, "This is an asinine question; the answer obviously is NEVER." The reply to the same question on the second questionnaire returned was equally explosive but somehow comforting at the same time; it said, "This is an utterly stupid question; the answer is ALWAYS." Early in the questionnaire analysis, it became apparen that there need be no fear that anyone might impose a new or uniform philosophy of teaching upon this group! They proved to be rugged individualist and supported that old definition that "a professor is a man who thinks otherwise." However, practically everyone answered the questionnaire and answered it thoughtfully and sincerely. This was an expression of interest in teaching that heartened the committees considerably.

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*All questionnaires were coded as soon as returned to the central office so that all replie could be kept confidential.

All the answers that lend themselves to tabulation are included in tables of data in Appendix I. Sometimes a question required simply a "yes" or "no" answer; sometimes the faculty members were asked to rate a group of suggestions on a scale of 0 to 3 (0 being of no value and 3 being of great value).

None of the tables of data has been subjected to analysis for statistical significance among groups for two reasons: (1) variability in the interpretation of some questions makes detailed statistical analysis unwise, (2) the data are presented for information and discussion (just as they were presented to the participants) without any desire to sanctify them.

At the Institute, some participants criticized questions as "loaded" or subject to different interpretations. Some refused to believe certain replies on the grounds (a) that the faculty member really didn't mean "yes" or "no" but felt compelled to say so because of the nature of the question, (b) that the answers were "spur of the moment" answers and would have been changed after reflection or exposure to several points of view such as developed in discussion groups at the Institute, or (c) that the participant just couldn't believe that faculty members would give such answers! Several specific examples are: approximately 72 per cent of the faculty answered *yes* and 28 per cent *no* on the question: "Would you enroll in a course of instruction in teaching techniques (with emphasis upon teaching the basic medical sciences to medical students), if given by acknowledged experts?" (see Table 47, Appendix I). When analyzed according to rank, the per cent of *yes* answers were: chairmen of departments, 55 per cent; professors, 59 per cent; associate professors, 75 per cent; assistant professors, 81 per cent; instructors, 86 per cent. One participant questioned these data largely on point (c) above. At this point, the section chairman called for a revote on the question and the original questionnaire vote was reaffirmed; indeed the *yes* vote was made even more impressive by the enthusiasm expressed at that point for such courses.

Another question: "Would you like to have for student use, a loose-leaf laboratory manual to be compiled from outstanding experiments now being used in all the medical schools in the country?" (Table 61, Appendix I), was given an overwhelming *yes* vote in the questionnaire returns but was offered scant attention at the Institute as an impractical idea because the physical facilities differ too greatly in each school to permit interchange of experiments. This must have represented an actual change of attitude between the time of answering the questionnaire and the Institute, because only 37 chairmen of departments in the whole country voted *no* pre-Institute, and this represents a definite minority of chairmen who served as participants at the Institute.

In defense of the questionnaire answers, it might be said that these represent answers of individuals thinking as individuals, whereas impressions gained from conferences may occasionally represent the attitude of the most articulate members of a group. At any rate, the committees urge the reader to study the tabular material, always making allowances for inadequacies in the questionnaire technique.*

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*The original data and comments (in coded form) are available to any group with a legitimate right to study these in more detail.

B. *The Questionnaire to Clinical Groups*

One of the ways to evaluate teaching is to talk to the end product—the former medical student now engaged in practice, teaching or research.

The opinions of many clinical groups were obtained, again by the questionnaire technique, in order to determine how much the teaching of physiology, biochemistry and pharmacology contributed to their practice of medicine and how much teaching could be improved so that it would be more useful. Their answers are included in Appendix I and are well worth studying by those who respect the opinions of their former students.

Some participants to the Institute stated that criticism (one would suppose praise as well) offered by men now in practice cannot apply to present courses given to first- and second-year students since important changes occur in these courses yearly. Even the comments of the present group of interns (1953 class in medical schools) cannot apply since these physicians had their course work two to three years ago. Furthermore, since the physicians polled have come from many medical schools, their general comments cannot be applied to any one school. However, the teachers can derive from clinicians' opinions some overall idea of the general value of their teaching over the past decade or two. If teachers are amused at the data in Table 4A in which each clinical group rates *itself* as "best fitted in general to judge *how much* and *what* physiology, biochemistry and pharmacology should be taught in *undergraduate* medical schools," they may not be equally amused that the overall vote of almost 1,000 clinicians places clinical teachers, members of the American College of Physicians or Surgeons, interns and residents and specialists in practice as better judges of *content* than the *teachers* in these three subjects. Indeed, teachers in physiology, biochemistry and pharmacology outrank only deans and medical students. This should not be interpreted to mean that clinicians believe themselves the most capable individuals to teach physiology, biochemistry and pharmacology, but rather that they believe that the teaching of these three subjects for future practitioners of medicine might be improved if clinical groups were consulted more regarding *content.*

C. *The Questionnaire to Senior Students*

It has already been noted that some participants thought that some medical students should have been selected to bring the student point of view to the Institute. There were places for 11 clinician-participants and all those selected were both clinicians and investigators. As it turned out, they held views almost identical with those of the basic medical science teachers and were a comfort to the physiologists, biochemists and pharmacologists; a second group of 11 clinicians, none of whom was a clinical investigator, might have been less comforting. The problem of the clinician-participant is mentioned only to emphasize difficulties that would have been encountered in trying to select a small, but wholly representative group of medical students. The solution again seemed to be in the questionnaire technique, though here a less formal one was used.

Data and comments from the replies of the senior students are included in Appendix I. The usefulness of a student opinion was questioned by some participants. Table 4A indicates that physiologists, biochemists and pharmacologists value the opinions of senior students more than the opinions of three groups of practicing physicians and more than those of their deans on the matter of course content. Table 3 indicates that in about 40 per cent of American medical schools, the medical students do report to the dean or faculty each year on the effectiveness of the teaching. It was pointed out at the Institute that each medical class contains students with an I.Q. well above the average faculty I.Q. and these students should be competent to judge how well they are being taught. It is true that, never having practiced medicine, the senior students cannot judge whether the basic medical science courses have given them the proper background for good medical practice, but the same may be said of many of the teachers in the basic medical sciences.

Other Sources of Pre-Institute Information

The deans of each medical school supplied information on actual salaries (and what they considered might be fair salaries), budgets and other matters pertaining to medical administration. Each delegate submitted a report on teaching activities at his school, a bulletin of his school, lecture schedules, laboratory manuals and examinations used by each department, and much information included in the tables of data was derived from these.

Chapter 2

The Institute

JULIUS H. COMROE JR.

THE FEARS and apprehension expressed in answers to the questionnaire were expressed again as the participants assembled in Atlantic City on October 19, 1953, for the Institute. Was it wise or necessary to spend so much money for a Teaching Institute? Why was the money forthcoming? Was this the opening gun in a campaign to force a new plan of education upon the medical schools?

The introduction to the Institute was brief because practically all of the time was to be allotted to free discussion with the participants conferring as small groups around a table. The chairman and co-chairman reiterated that there would be no recommendations or votes. Indeed, there would be no mimeographed notes or summaries because it would be impossible for any committee to recapture in a few typed sheets the flavor and shades of opinions expressed in informal discussions by 10 or 20 men over a six-hour period. It was pointed out that the experience of past conferences had been that such summaries, prepared hurriedly by tired participants between 7 P.M. and 3 A.M., became the subject of much controversy the next day, often because of slight changes in phraseology, and that much valuable time and effort, which could have been spent on fruitful discussion of new topics, were wasted. Furthermore, it was pointed out that in practice* participants differ very little from medical students in that they have great faith in the printed word and would regard any mimeographed material as the official *summary* of the Institute and perhaps eventually as the Institute *itself*. The latter would tend to discourage further discussions at a local level in every faculty throughout the country and so defeat a major purpose of the Institute. A brief oral report of what was discussed during the previous day in six to 12 conference groups was given each morning for purposes of general orientation, but it was hoped that the real value of the Institute was what went on in the minds of men and not what was hastily prepared as summary material, either oral or mimeographed. Again, by analogy to scientific meetings, the most valuable aspects are often the discussions in meeting rooms or hallways and not the printed abstracts.

The chairmen announced further that there would be no word-by-word recording of the discussions, (1) because it would be a formidable task to transcribe five full days of discussion with six to 12 discussion groups meeting at once, and (2) because recording often dampens the spontaneity of the discussions. However, each discussion group would, in addition to a chairman or discussion leader, also have a recorder (one of the participants in that group) and a secretary to act as his assistant. The latter two would record (a) the general problems discussed, (b) points on which there was general agreement or disagreement, (c) problems for which there was no apparent solution but which deserved further discussion at the Institute, and (d) interesting new plans or concepts which might profitably be brought to the attention of all teachers in this report.

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*Not in theory, however. Participants gave mimeographed notes a very low rating as a teaching or learning technique.

General Plan for Discussion Groups

With full awareness of multiple points of overlap, the committees decided that an arbitrary division of the whole subject into four discrete compartments was necessary in order to plan for the discussions of the Institute. These were:

1. *Content: What* and *how* much should be taught medical students; what are the aims of medical education?
2. *Interrelationships:* What should be the teaching relations (a) of any one of the three departments of physiology, biochemistry and pharmacology to the other two? (b) between these three departments and all other departments in the medical school, including the clinical departments? and (c) between these departments and all the other schools in the university (para- or auxiliary medical schools and more particularly the basic science* departments)?
3. *The Teacher:* How can one attract more or better teachers into the basic medical sciences? What are the best ways of training these? How can they be rewarded commensurately with their value to medicine?
4. *Teaching and Learning Techniques:* What are the advantages and disadvantages of lectures, conferences, laboratory work (classic and the project type), examinations and grades, new systems of medical education? How can one do controlled studies in medical education? What is the proper student-teacher relationship?

On the first day the participants met in groups of 10 to 12. The physiologists met together in four groups of 10 to 12; the biochemists similarly came together with other biochemists and the pharmacologists conferred with fellow pharmacologists. To each of these 12 groups was assigned a clinician and a dean (who in most cases was also a physiologist, biochemist or pharmacologist). Each individual was assigned to a group, as a working member; none was permitted to be a "floater."

An agenda, previously prepared by the subcommittee on "content" and covering matters in which each participant was expert since these were in his own field, was distributed, and formed the basis for the day's discussion (see Appendix IV).

On the second day, the participants were reformed into six groups to discuss "interrelationships." It was now necessary that each group contain physiologists *and* biochemists *and* pharmacologists, in addition to several clinicians and deans. This, of course, required larger groups (approximately 20 to 22 per section).** These same groups met together on the third and fourth days to discuss "the teacher" and "teaching and learning techniques." The advantages and disadvantages of reshuffling the membership on the third and fourth days were considered carefully. The obvious advantage of putting each participant in contact with a larger number of his fellows seemed to be overbalanced by the disadvantages of (a) the new groups going over much of the same ground

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*Throughout this report, the term "basic sciences" refers to mathematics, physics, chemistry, biology and other [illegible]ed as premedical subjects; the term "basic medical sciences" refers to [illegible] pharmacology and other sciences *basic to medicine* that are generally [illegible]m in the first two years of medical school.

**In the formation of these [illegible] made to secure good distribution of participants (a) on an age basis, (b) on a [illegible] (c) on the basis of the type of school represented. No participant was assigned [illegible] up along with the dean of his school.

each day, and (b) the time required for the new groups to "open up" with new participants each day so that they are individually and collectively prepared for the most productive and practical kind of exchange of ideas.

Again agenda, prepared by the committees on "interrelationship," "teacher," and "teaching and learning techniques," were used as the basis for discussion on these three days. There was no insistence that all agenda be planned along the same lines. That of the first day considered specific matters often unrelated to information in the tables of data prepared from the questionnaires, while that of the second day was built largely about the tables of data. Some committees attempted to adhere closely to the planned agenda by using a time schedule; others encouraged the introduction of new problems even at the expense of the prepared agenda.

On Thursday each participant was asked to indicate a topic that he would like to discuss or hear discussed further. These topics fell into 10 main headings and the participants met in 10 sections on Friday morning for more detailed discussions of these matters. These self-selected topics were:

1. Content—Biochemistry
2. Content—Pharmacology
3. Content—Physiology
4. Preclinical correlation and integration
5. Teachers
6. Project teaching
7. New, experimental programs in medical education
8. Teaching and learning techniques
9. Interrelationships with clinical disciplines
10. Universitywide interrelationships

As mentioned previously, overlap was inevitable. For example, "project teaching" was discussed on four different days. On the first day, projects were discussed as projects in biochemistry, in physiology or in pharmacology; on the second day, they were discussed as a device to cut across departmental barriers; on the fourth day as a learning technique, and at the special session on the fifth day there was a detailed and more practical discussion of specific projects.

Finally, there was a closing, summarizing session on Friday afternoon and the Institute was officially ended. Many of the participants came to the Institute unenthusiastic about the prospect of spending a five-day period discussing teaching; all but one went home enthusiastic about their week's experience. Many came with fears that the Institute would pass resolutions and force experimental programs in medical education upon the various faculties. No resolutions were planned; no resolution was passed. No part of the planned program was devoted to consideration of any single experimental program in medical education. The committees recognized that there are many experiments going on in medical education throughout the country, some large and some small (Appendix III), and that sometimes small ones are of more general interest than the more radical ones which require unusual financial support. Toward the end of the week, however, the committees had to resist pressure from the participants, many of whom now wished to introduce resolutions or to create time for a plenary session devoted to reports on the new Western Reserve, Harvard or Kansas programs in teaching!

The next four chapters contain an account of the discussions of each day of the Institute. It must be pointed out that these chapters often emphasize what was said at the Institute rather than what was learned in the pre-Institute survey. Since some participants spoke freely (and occasionally too long) and others failed to meet one of the criteria for selection (being articulate), the discussions were occasionally dominated by the "speech-makers." Further, since each group contained men highly respected nationally because of their wisdom, experience, clear vision and incisive phraseology, these men on occasion, though unconsciously, appeared to mold the final opinion of the group. It is important, therefore, to read Chapters 3 to 6 and to study the tables of data at the same time; only in this way can a fairly complete account be obtained of the opinions of the participants there and of a much larger number of faculty members who were represented, though indirectly, at the Institute.

Chapter 3

Content and Aims of Physiology, Biochemistry and Pharmacology Courses

GEORGE H. ACHESON*

THE MAIN FRUIT of the first day's work was the expression of aims and attitudes of the participants, meeting in separate groups as physiologists, biochemists and pharmacologists. A surprisingly consistent pattern arose from their deliberations on the first day, and echoes of the same attitudes recurred on all the subsequent days of the Institute. How these aims coincide with the actual practice of teaching is a question not to be answered here. Yet it is of considerable interest to learn what the teachers of these three disciplines *want to do* with their students. Although there is much that is consistent among the three disciplines, they also exhibited differences in their attitudes. The following material is arranged in such a way as to emphasize first the common pattern and then the differences.

A. Aims Common to the Three Courses

1. *Recruiting of teachers and scientists*

Students tend to imitate good teachers and at least temporarily to model their lives after them. It is not surprising, then, that our participants are among those who are accused of trying to make of the medical students physiologists, pharmacologists or biochemists. The accusation appears also in another form: they treat medical students as though they were graduate students. Unfortunately the fact that the student-teacher ratio is seldom as favorable as 10/1 makes it impossible to handle medical students in the same personal way as that in which "graduate students" are handled under the apprentice system. Much of the Institute's discussion concerned ways and means by which teaching in preclinical courses with from 32 to 200 students can be made more personal and better adapted to the needs and motivation of the individual students. The implication is, however, that these preclinical teachers teach as though the medical students were aiming primarily toward a life of research and teaching, rather than toward a life of practicing medicine.

To what extent these accusations are true in practice was not given much attention on the first day of the Institute. Perhaps these participants are not the best experts to judge this (see Appendix I, Table 4).** At any rate, they were asked to formulate what they *ought* to be doing, not what they *are* doing, and to discuss specifically the first- or second-year course for medical students. The formulation that the participants produced is something like the following: our courses should be regarded as introductory courses in medical sciences intended primarily for *medical* students. They should be, and usually are, in part designed to entice a few medical students into teaching and research; we hope the best of the class may join our ranks—the best in teaching potential

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*Footnotes to Chapters 3, 4, 5 and 6 were added by the editor and not by the authors.
**All tables of data are in Appendix I, Pages 103 to 162.

and the best in research potential. We think highly of these potentials and hold them up before the class as among the ideals to be emulated. We think all the students should recognize their value, whether or not it is an important part of their careers. For those who wish to join our ranks, we provide opportunities apart from the medical students' courses for them to try their hand at some aspect of our work in the atmosphere of apprenticeship. But we don't expect most medical students to become professional teachers or investigators and our introductory courses cannot and should not attempt to prepare them to do so.

2. *Preparation for practice of medicine*

All three disciplines are confident of the utility of their first- or second-year courses to the eventual practice of medicine. The physiologists desire that the physician put to work the physiological thinking he began to learn in the first year toward the solving of clinical problems. The biochemists point with pride to the continued growth of the use of biochemistry in medicine and to the degree to which biochemical thinking pervades almost every department in the medical school. They expect the physician to use his biochemistry. The pharmacologists see the importance of rational therapeutics to the physician, and try to give the student a basis for the intelligent use of drugs at the bedside and to help him get that store of understanding and useful information which permits the making of sound clinical decisions.

The observer cannot doubt the sincerity of the Institute's concern for the needs of young men and women who are preparing to take care of the sick. He therefore asks what concept these preclinical disciplines have of the relation between their teaching and that of the clinical departments. On the first day of the Institute, the discussion of this topic was limited to those aspects which bear upon the content of the first- and second-year courses. In the questionnaire (Table 5A), chairmen of the departments were asked: "Do you believe that it is advisable to emphasize, throughout your course to medical students, how the basic medical sciences contribute to the understanding of clinical disorders?" Of 200 who answered, only 18 answered *no* and 26 others answered *yes, with reservations;* the remaining 156 answered *yes.* Pharmacologists were almost unanimous (94 per cent *yes*) in favor of general clinical orientation; this is to be expected, probably because pharmacologists deal with more advanced students and because of the more direct clinical applicability of drug actions.

The Institute discussed this question in more detail. One group wrote: "The desirability of bringing in clinical application was dismissed as almost trivial. The answer is simply *yes.*" But usually the "yes" was qualified by a proviso that the bringing in of clinical application should in no way interfere with the main purpose of the course, which is to impart a useful understanding of physiology, biochemistry or pharmacology. In accordance with this view, none of the group would exclude material otherwise thought to be useful merely because it seems to lack clinical applicability. They agree that they are not teaching clinical medicine and that it is not their function to teach the student to examine patients.

Even the presentation of patients they do not regard as an important part of their courses. Some see hardly any instances in which it would be justified. Others would use the presentation of patients by capable and enthusiastic teachers as a means of relating and emphasizing principles important in their courses. But even these see relatively few instances in which this is valuable. The most generally held view is that the presentation of patients is apt to be a diversion. At the same time there appears to be a cordiality toward correlation clinics in the first and second years (see page 45) and, in some instances at least, a willingness to have more clinical teaching introduced into the first two years, outside of their courses (and, needless to say, not depriving them of curricular hours).

The same principles are applied to the use of man (ordinarily the student himself) as an experimental subject in the laboratory. Man would be employed whenever it is both safe and useful to the course. Some participants noted the importance of discussing with the students the safety of human experiments. The budding physician should know how it feels to be the subject under experimental conditions. He should also learn that his very presence as an observer affects the outcome of the experiment on his patient. Man is an excellent subject for the study of controls and how to design good experiments. When another species, or an isolated organ, a slice, or a *brei*, is better suited to the purpose of the course, however, the participants do not feel guilty about using it in preference to man. Since many of the phenomena dealt with cannot be analyzed in human subjects, the extensive use of non-human subjects and material is regarded as essential.

The same point of view is evident in the attitudes of the three disciplines toward the question of what practical procedures the student should learn in the first- and second-year courses which will serve him in later years. The basic attitude of the various discussion groups is that practical procedures are really not their business, and that procedures should not be used in the course merely because they are used clinically. On the other hand, clinically useful procedures are regarded as nice byproducts, provided that they serve a useful function in the interests of the course.

The discussion groups were in agreement that the medical student is expected to continue learning about the preclinical disciplines throughout the clinical years, and, they hope, for the rest of his life. The first- and second-year courses are introductory; they are to provide a framework useful to the student in later courses. Since the subject matter of these three fields enters into the teaching of every branch of the curriculum, the later courses cannot help but extend the structure already begun. The introductory courses should try to give the student a sense that these sciences are in a state of continuous development and that our facts are merely stages in the acquisition of knowledge. The teachers expect the student to be able in later years to keep up with new ideas stemming from physiology, biochemistry and pharmacology which affect the practice of medicine. They want to get the student to like and respect their subjects and ways of thinking, so that he will want to learn more later. They seem to feel that the burden of the continued teaching of preclinical material in the clinical years must fall on the shoulders of the teaching members of the clinical departments, as is now the case (see p. 46).

A clinical teacher sat with every discussion group. Each one was experienced in some laboratory science and hence to some degree a physiologist, biochemist or pharmacologist, but none of them was primarily a teacher of these subjects. These clinicians agreed in the main with the points of view of the preclinical teachers. They accepted their responsibility of teaching physiology, biochemistry and pharmacology to clinical students insofar as these subjects contribute to the purposes of clinical teaching. And they agreed that the preclinical courses in these subjects should not teach clinical medicine but provide a basis for it. They agreed that the medical student should not examine patients in these courses and that the presentation of patients has a limited utility in them. They agreed that, fascinating as clinical subject matter is and useful as clinical procedures are, these should be used in the preclinical courses of physiology, biochemistry and pharmacology only when they contribute to the main objectives of these courses.

3. *Teaching of principles and concepts*

The discussion groups consider that the main objective of their first- and second-year courses is to impart to the medical student a useful knowledge and understanding of the principles and concepts of physiology, biochemistry and pharmacology. What do they mean by this? High priority given to "mechanisms" and "processes" suggests an emphasis on the analysis of particular phenomena in terms of general laws. Selection among principles, concepts, mechanisms and processes is implied by the fact that they were often qualified as "the important" ones, or as basic or fundamental. As noted above, the ultimate interest is recognized to be man, but there is resistance to making a fetish of human material in these courses. The participants insist that human physiology, biochemistry and pharmacology be considered as phases of biology and not be allowed to crowd more generally applicable principles out of the picture. Hence comparative biology is often a useful approach.

It is evident that physiologists, biochemists and pharmacologists, as represented by our participants, are searching for simplifying generalizations for themselves and for their students, especially the beginning ones. Although in their research capacities they are concerned with minutiae, their activities are directed by broader considerations concerned with the things organisms can do. For research, our participants can afford to concentrate on the minutiae and occasionally construct or alter the broad considerations. As teachers, however, they feel forced by a number of factors to emphasize the broad considerations, ignoring most of the minutiae, except for a few examples. In some areas the usefulness of this approach is manifest, as with the application of principles governing pH to a wide variety of biological situations, the effects of anoxia on most tissues and function, or the dependence of effect upon dose, interval between doses and rate of elimination for drugs in general. The principles gain usefulness, however, only as the student is able to apply them to specific instances. The concept of homeostasis, for example, is useful only with respect to the many and varied situations in which the student is likely to encounter it in operation. Hence much of the teachers' time must be spent in exemplifying, and their success as teachers will depend to a great extent on their selection and use of material in exemplifying principles. They will never cover all the situations the student is likely to encounter in his field, but in showing the application of principles, they will teach the student how to deal with unforeseen situations. One common error that results from this approach is unsound deduction from a principle or hypothesis on the student's part. The oversimplification of the autonomic nervous system, for example, in which the sympathetic and parasympathetic systems are pictured as in eternal and ubiquitous opposition, leads to many such difficulties. There are plenty of areas in the courses our participants teach, in which this kind of trouble is hard to avoid. The important consideration is that the teachers have their eyes open for simplifying generalizations and recognize their value in an introductory course.

The emphasis upon principles and concepts reflects the low esteem the discussion groups have for the mere accumulation of a body of facts. There is a general tendency to deemphasize minutiae and to oppose rote memorization. The skill of the teachers, according to one group, depends upon their ability to present certain facts in an intelligible way and to maintain proper balance between the facts, and the conclusions and general principles to which they lead. The addition to the course of new details should not endanger the teaching of basic concepts. The student must, indeed, learn the language of the field. But he should not be overburdened with structural formulas, names, normal values, doses, pharmaceutical preparations, alternative systems of measuring, side effects, alternative procedures and the like.

It is alleged that the examinations given in the introductory courses in the three disciplines suggest that our participants do not in fact have such a horror of detailed information and rote memorization as they seemed to profess on the first day of this Institute. Whether this interpretation is generally correct or not could be decided on the basis of a more systematic study of these examinations than has heretofore been reported. It should be pointed out that there is some doubt as to whether these teachers have a clear concept of what their examinations should measure and what they do measure (see p. 87). Perhaps an improvement in examinations would help to achieve the purposes of these courses. The reader should not forget that on the first day the participants were discussing what they wish to do rather than what they have so far succeeded in doing.

4. *Creation of thinking physicians*

Mere acquisition of facts is also contrasted to learning how to use facts, concepts and hypotheses. The development of the capacity to use these is considered one of the foremost aims of the three courses. Too much detail, writes one group, gives the student intellectual indigestion. On the other hand, when the presentation of topics is cut down to a mere recital of the conclusions of so many years of experimental work, there is danger of making the student into an *idiot savant.* With the optimal amount of detail, the student will be able to think.

The discussion groups enlarged this concept of teaching the student to think. The one instrument which the student would be encouraged to use early is his head. The course would aim to create disciplined rather than stuffed minds. It would be designed to produce thinking gentlemen and give them something to think about. Each discipline would foster the type of thinking appropriate to its framework, so that the student would learn to "think physiologically," or "biochemically," or "pharmacologically." The teachers would try to develop the student's capacity to use the facts of the subject in other courses and in the solution of clinical problems, to provide the student with the equipment for learning later whatever he then finds necessary, to promote the development of a critical faculty and quantitative judgment. The student would learn to question rather than accept a statement, to evaluate claims of therapeutic success, to make intelligent use of new ideas and new drugs.

In the effort to achieve this result, the courses would be designed to give the student a feeling for the manner in which the concepts of these sciences have been arrived at. There was strong emphasis on the value of a historical approach to the development of these sciences. Although the student should not be burdened with historical details, each department would impart to him an understanding of the continuous and rapid development of knowledge in its particular field. An appreciation of the historical steps which have led to major advances would help the students to understand the value of these sciences in medicine now and to be able to use future advances. One of the criteria for choosing materials to present, as agreed upon by one group, is the importance of their history in the development of modern thinking in the science. The historical approach is regarded as an important device for giving the student an appreciation of scientific method. One group discussed the advisability of establishing courses in the history of medical sciences: a few favored a compulsory course, a larger number an elective course, and a still larger number no course.

There was agreement that some time should be spent in documentation of the experimental basis for conclusions. Details, writes one group, should be sacrificed to deal with subjects in terms of evidence, to show how the statements in textbooks were arrived at. The student should be shown how to evaluate data, how to weigh evidence, how hypotheses are built and tested. As a physician he is expected to be able to collect and evaluate signs and symptoms and build up a reasoned diagnosis. For this he should understand the implications of biological variation. It was considered most important to show the student how to design experiments and how to think about experimental controls. The laboratory was regarded as especially useful for all these purposes. Its overall purpose would be to enhance the student's understanding of the methodology, value and power of observation and teach him to record and collate his data. It would help him to understand the quantitative limitations implied in every act of measurement and the implications of biological variation. Even so mundane a subject as quantitative analysis would help the student to understand the difficulties of science and to respect its product.

All these efforts of the three disciplines can be described as means of helping the student to adopt the attitudes and methods of science. It should be emphasized that this is a moral point of view, a way of life. The scientist must have that degree of honesty and humility which will allow him to consider the data and their application to possible hypotheses instead of succumbing to his desire for acclaim, or a short cut, or a lazy answer. So must the physician be able to consider the patient's manifestations of health or disease, the patient's emotions and relations to other persons, without being impeded by his own desires and ambitions. Respect for the fragility and dignity of the human person is parallel to respect for knowledge and how it is used. It may be argued that the physiologists, biochemists and pharmacologists are not close students of the actualities of the life of the practicing physician. Nevertheless they have a rather clear idea of what kind of person they would like him to be. They want him to be a warm and responsible person, and they want him to be a scientist, a man who collects and uses his data in the field on an informed and intelligent basis, a man who uses his head. In answer to the question, "Should the laboratory course be geared to train medical practitioners? medical scientists?" one group wrote this: "On the assumption that the term medical scientist referred to the scientifically trained physician, then the group felt that there was really no difference between good medical practitioners and medical scientists: that the more scientific a physician is, the better practitioner he is. In other words, we are not willing to draw any distinction between the art and the science of medicine." Perhaps this is the light in which the teachers at this Institute would like to be seen, at once scientific and humanistic, as befits the good teacher as well as the good physician.

5. *How many and what facts are essential?*

Everyone knows that the body of facts, evidence and hypotheses available in the fields of physiology, biochemistry and pharmacology is tremendous. Even if one limits this to what most people would agree would be useful to the physician, the body of knowledge is very large. One might expect its size to be an insistent topic in the discussion groups on the day of the Institute when the topic was the content of first- and second-year courses in physiology, biochemistry and pharmacology for medical students. How could sufficient information be crowded into the hours allotted to these courses? In fact, the size of the body of knowledge received very little attention on the first day (see p. 37).

The participants' main interest was in getting across a general understanding of the functioning of the organism. This, however, was implicitly acknowledged to rest upon a basis of facts. Each discipline agreed that its teachers have in mind a body of knowledge which should be imparted to the students. The discussion groups seemed to feel that they could work out some sort of agreement as to what parts of their fields are included in this body of knowledge, if they had the time. Some of the subdivisions of current lecture schedules (Table 10) are more important to cover than others. The opinion was expressed several times that the teachers of these three disciplines felt a responsibility to see that the important subdivisions of their fields were covered—in some other courses if not in their own.

All through the first day of the Institute, references were made to the matter of leaving decisions as to the teaching of these three fields to the interest and abilities of the staff members. The views on this varied between opposition to permitting a professor to "ride his hobby" and approval of the practice, "within reason," as a valuable teaching technique. Between the latter view and the view that the departments have a responsibility to see that all the important aspects of their fields are covered, that the course should be a well-rounded one, a potential antagonism exists. It seems likely, however, that in the varied practices of different departments reflected by the varied opinions of the participants, neither view is often carried to an extreme. Perhaps it is better that the participants did not take the time to hammer out a syllabus for each of their courses—a syllabus which might shackle the independence of the teachers.

The attitude toward subject matter seems to be quite varied among the participants. The view that the course should cover certain subjects is balanced by the view that the material included should be chosen in order to teach the student how to use his head in terms of these sciences. There is often a tendency to speak as though the subject matter used in achieving the latter aims is of little consequence. It is clear that the laboratory, at least, is not expected to cover the entire field but to exemplify the thinking of the science. Hence, there is great freedom in choosing the laboratory subjects, as reflected by the popularity of projects. On the other hand, there is greater emphasis in the lecture course on covering the field. Still, the limited number of lectures given in most of the courses does not permit a very thorough coverage of what might be considered the field. It seems likely that here too the actual material used under a given title may be rather variable from department to department. If we look at the content of the physiology textbooks of a few decades ago and compare it with the current textbooks, we may see many topics which are now ignored. The current rapid change of knowledge in these fields requires and insures adaptability on the part of the teachers as to what subject matter is important to use in teaching.

Alan Gregg has stated that "the medical school teachers ruminate and haggle over what facts should be packed into the student's four years' space of time." If the participants of this Institute are representative of the teachers of physiology, biochemistry and pharmacology in our medical schools, it is evident from their behavior that the teachers of these three disciplines are not spending their time in this way. The participants are obviously accustomed to the compromises required of a teacher in presenting material to students. They would choose what is exemplary, seek simplifying principles and leave out what is less essential. Their major emphasis is upon what the student gets out of the course, not in accumulated facts, but in useful principles, in the ability to think in the subject, in the ability to meet new situations on the basis of his understanding of the subject.

6. *The importance of biological variation*

On the first day of the Institute there was agreement that an understanding of biological variation is important to medical students from the point of view of each of the three disciplines. To some of the participants the important aspect of this subject is examining the difference between quantitative values for a control group and those for a test group. For others it is what values should be regarded as normal, or how to express the normal value and degree of variation. Still others think of the subject as preparation for the student to interpret the validity of conclusions he may read in clinical papers. One group pointed out that all of these statistical aspects are parts of a broader subject already mentioned above, namely, how to design experiments and how to think about experimental controls. The teachers believe that this subject is an integral part of their teaching aims, something that every instructor must concern himself with.

Everyone agreed that there must be some instruction in the narrower subject of biostatistics. It was repeatedly pointed out that this is not the concern of just one of the three departments, but of importance to all. One group felt that there should be a separate course in the subject, and argued whether this should be given by a biologist who has some statistical insight or by a statistician knowing some biology. The group agreed that, whatever the teacher's background, the better teacher he is, the better the result.

It is evident that a good many of the departments now take time to present statistical material in their courses, and that other departments would like to do so. Perhaps it is not too risky to divine that many of the teachers of physiology, biochemistry and pharmacology, as represented by our participants, while realizing the importance of biostatistics, feel ignorant about it and wish the other fellow would do something about it. On the other hand, the fright in the student's mind aroused by the simplest mathematical symbol is too often clearly evident. The teacher is faced with the task of introducing the student "painlessly" to a modicum of mathematics, or with an alternative, as one group suggested, of teaching the ideas of biostatistics without using mathematical bugaboos.

One group presented a cooperative scheme for teaching biostatistics. This would begin early in the medical curriculum, as, indeed, all the discussion groups which tackled this problem felt that biostatistics should. The anatomy department, for instance, would introduce certain basic principles of statistics. Biochemistry would build a contribution appropriate to its subject matter on the foundation already begun; physiology would add its contribution, and so on until the clinical years. Someone in each department would be assigned to this job, and these persons would get together and plan the progression of their teaching. Thus somebody in each department would have some idea of what aspects of the subject the student had already been exposed to at the time for the department's contribution.

The extent to which the laboratory is suitable for the presentation of biostatistical principles was the subject of disagreement. Some participants showed little enthusiasm for this topic. One physiology group expressed the view that most laboratory exercises do not lend themselves to statistical analysis and discussed whether special exercises should be developed for this purpose. Another group suggested that class data be used wherever possible to portray the range of normal. On the other hand, it was evident that the pharmacologists frequently make use of statistics in connection with their laboratory experiments, and one group advocated using every experiment for this purpose. These various views probably reflect the imperfect adaptation of laboratory teaching to the aims of the courses which were discussed above.

7. *Aims of the laboratory course**

The laboratory operates at several levels at the same time. The student learns techniques and procedures and deals with apparatus of varying degrees of complexity. Individually, or with a small group of fellow students, he performs experiments with biological systems, the results of which depend not only upon the student's proficiency in technique and ability to observe and interpret, but also upon biological variation. Our participants feel that the laboratory should provide the student with first-hand acquaintance with examples of the facts on which the various theories of the subject are based. From individual results, therefore, the student is expected to make interpretations, and often also generalizations relating his data to masses of other information. At the same time the student at the next bench is apt to have different results from the same kind of experiment. Some judgment, expressed or implied, is made as to the meaning of the difference between results. Results differ both quantitatively and qualitatively. When larger numbers of similar observations are made, the opportunity exists for considering the results on a statistical basis. And finally, the class has the opportunity to examine the design of the experiment and discuss what can be learned if a different design is used and further experiments are done.

These are the steps in the ladder of scientific methodology. Our participants emphasize the importance of teaching the principles of experimental inference. The hazard of the laboratory teachers is that they will overemphasize one of the earlier steps and ignore other steps. The student is quick to accuse the teachers of overemphasizing techniques and procedures (see Table 4B). Sometimes this is because the student himself failed to advance beyond that step. The earlier the laboratory course in the student's development, the more difficult it will be for the teachers to get him to understand the further steps. To avoid overemphasizing technical problems, the teachers tend to look for surefire techniques. But they find that the principles they would like to exemplify require more complicated apparatus and often more difficult procedures. Our participants feel that the student should understand the basic principles of the apparatus he uses, but that he should learn techniques and procedures only for the purpose of doing experiments which help him understand the thinking of the science.

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*This is discussed more fully on page 75.

Particularly with beginning students, the teachers also tend to choose sure-fire experiments—phenomena easy to elicit, easy to observe, easy to comprehend. This approach has a wide field of application but runs the risk of misuse in certain ways. One is that the laboratory course will go no farther up the ladder of scientific methodology than the step of observing and recording phenomena. Our participants specified that laboratory experiments should be designed to bring out principles and concepts. Another risk is that the laboratory work will be restricted to qualitative observations instead of going on to quantitative ones. Much that is essential in the thinking of these sciences depends on the interpretation of quantitative results.

How far the student will climb the ladder of scientific method depends not only on his ability and industry, but also upon the design of the laboratory course and the attitudes of his teachers. As long as they expect him to learn techniques and procedures and only look to see if his result is the correct one, he is learning only to be a technician. When the instructors go on to discuss whether the aberrant results are to be regarded as due to technical difficulty or to biological variation, they have opened the door to a much wider realm. Only when the student's results are accepted in the light of his own critique, can he and his teachers go on to the more important tasks of the laboratory course. Only then can biological principles be discussed in the light of varied results. Only then can class, rather than individual, results be considered, statistics be brought in, and the design of experiments receive its due attention.

*Project teaching** was discussed as a method of conducting some of the laboratory work. A project is intended to permit the student to pay sustained attention to one topic and thus develop more intimate contact with and more detailed knowledge of one specific field of interest. He has a better opportunity to collect pertinent facts, test their validity, and deal with hypotheses in this restricted field. Viewed in this light, the project is an exercise in scientific thinking. When projects are used, one student might spend half of the laboratory course studying the physiology of the thyroid gland, while another student might spend the same time studying the physiology of exercise. We might cite much more esoteric examples. In either case, each student must study several branches of the discipline less intensively in compensation for the more intense study of one particular branch. It is asked, does this not limit the student's acquisition of the traditional body of knowledge of the discipline? Does it not prevent him from gaining the broad background which is such an important part of medical education? Are projects not likely to produce narrow specialists in esoteric fields? In the defense of projects against these charges it is pointed out that the laboratory time which is given over to projects is only a part of the total course. The intensive study of one field is contrasted to a purposely broad account of the conventional material of the discipline in lectures, conferences and reading, as well as to a group of laboratory experiments in the prescribed part of the laboratory course designed to cover certain important approaches to the discipline. The student is still exposed to the broad view, it is argued, but now he gains even more from it because of his intense study of a narrow field in the same discipline. An analogy is made with the case method of clinical teaching, in which different students see and examine different patients and therefore learn about different situations and different diseases, while getting a broad view of patients and their diseases from other parts of the clinical teaching program.

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*"Projects" are defined and discussed in greater detail on pages 44 and 79.

B. Special Aims of Each of the Three Groups

The timing of the three courses in the curriculum should always be kept in mind. Physiology and biochemistry are usually given in the first year of medical school, often simultaneously (see Table 12). In almost every case pharmacology is given in the second year and has considerably fewer curricular hours (see Table 9C). The physiologists and biochemists usually deal with students who have had gross and microscopic anatomy and perhaps some neuroanatomy. The students with whom the pharmacologists deal have completed their physiology and biochemistry courses and have taken or are taking courses in pathology and microbiology. The emphasis of physiology and biochemistry has traditionally been on the normal function of the body. Two of the discussion groups from these disciplines regarded the use of pathological subject matter as a useful aid in bringing out the normal. Pharmacology, by contrast, considers the discussion of pathological states to be the usual thing.

Of the three disciplines, physiology is the oldest, and its name is often used to cover a field broad enough to include the other two. While physiology concerns itself basically with the function of living things in all kinds of ways, biochemistry concentrates on the chemical constitution of biological systems and the manner in which the chemical components interact, and pharmacology considers the effect of chemical substances on biological systems. Hence the latter two begin with more specific directives, and physiology is left in the position of choosing areas which do not overlap too much with them.

Biochemistry and biophysics are sometimes regarded as dealing with basic mechanisms, while physiology deals with integrative or control mechanisms. There is even a slight tendency to separate biophysics from physiology as a separate department. Some people seem to regard the biophysicist as a person who designs and repairs instruments which are beyond the ken of the departmental machinist. A more useful definition makes the biophysicist the physical homologue of the biochemist; i.e., one who studies how the behavior of biological systems depends on their physical constitution and on physical laws. Two of the discussion groups of this Institute felt that biophysics should usually remain largely within biochemistry and physiology departments in our medical schools.

1. *Physiology*

The physiologists are fairly well agreed on a core of material which they feel should be presented in the physiology course for medical students (as the biochemists and pharmacologists are for their courses). It deals primarily with the function of the major organ systems of the body, and at times has a healthy admixture of biochemistry as well as biophysics.

Despite the growth of clinical physiology, the physiologists at this Institute would not go far in introducing clinical material into their introductory course. The physiologists can, however, point to several byproducts of their course which they believe the physician will find useful. The mechanisms studied in the physiology course are expected to be useful in the study of the sick patient. The student, therefore, is to acquire habits of careful observation and recording and to learn to analyze phenomena into physiological mechanisms in preparation for the analyzing of signs and symptoms in the establishment of a reasoned diagnosis. In order to think physiologically, the student must have certain basic quantitative information ("normal values") which will serve as a beginning for the store of information a well-trained clinician must have. The reading of clinical publications by first-year students was condemned as a general practice (the pharmacologists, dealing with second-year students, are more willing to make use of it); but it was recognized as useful in selected circumstances for encouraging interest and making use of the large amount of physiological material which exists in these publications. Even the use of apparatus for measuring and recording physiological phenomena is regarded as useful to the future physician because all his life he will be handling apparatus and making good or bad use of his knowledge of the errors inherent in the use of apparatus.

2. *Biochemistry*

The biochemists found themselves disturbed on two accounts. First, they felt, whether it was justified or not, that they were unpopular. This resulted in part from the report of the evaluation of the departments by groups of senior medical students (Table 4B) in which it appeared that biochemistry courses are less satisfactory to these students than physiology and pharmacology courses, and from the position of biochemistry in the estimation of several groups of clinicians (Table 2) who did not rank it so high as physiology. And second, they agreed that their laboratory courses are not doing so good a job for the student as they would like and believe to be possible. Yet the biochemists showed a deep and sincere faith in the importance and utility of biochemistry to every future practitioner. They felt a mission to put biochemistry across and believed that, with the exception of laboratory, they are doing what is necessary to accomplish this.

Despite the extensive penetration of preclinical and clinical science by biochemical concepts and biochemical knowledge, the biochemists are the farthest of the three disciplines from the clinicians in their interests and attitudes.* They are the least sanguine about the usefulness of presenting patients in their course, some of them seeing hardly any instances in which it would be justified. They would use man in the laboratory whenever it is both safe and useful to the purposes of their course, but they say that this is seldom the case. A few of the participants would require the medical student to learn some normal values as a contribution to his learning of biochemistry, but others would leave this kind of information to the clinical years. Some of the biochemists would require the student to learn a few carefully selected qualitative tests merely because they are widely used in the clinic. The predominant opinion, however, seems to be that procedures should not be brought into the course simply because of their clinical usefulness. The need for later organized teaching in clinical biochemistry is recognized.

All four biochemistry groups discovered on the first day of the Institute that they were dissatisfied with their laboratory course. On the last morning of the Institute, a group of biochemists met and discussed laboratory intensively. It should be emphasized that the biochemists found themselves in substantial agreement about the aims of their course for medical students outlined in the preceding sections and about the means of achieving these aims. The difficulty is that the laboratory course has lagged behind biochemistry. A survey of the content of 56 of the country's biochemistry laboratory manuals is reported in Table 10D. Although all the manuals studied were published for the 1952-53 class, the comment was made in more than one discussion group that the content of these manuals was probably in many instances not up to date, unused older experiments being listed, and newer experiments now under development not being included. Nevertheless, the survey supported the view that the purpose of many of the experiments bears little relation to the aims of teaching modern biochemistry for medical students.

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*See Tables 23B and 24.

One discussion group questioned in particular the usefulness of biochemical preparations, exercises on colloid chemistry, excessive numbers of alternative analytical methods, and experiments on simulated biological material. It was noted that the groups of senior medical students think of the biochemistry laboratory as overemphasizing techniques (Table 4B). One of the discussion groups condemned this emphasis. Another condemned the use of numerous isolated qualitative procedures, but recommended that a judicious selection of tests be made on the basis of extensive clinical use and teaching value. Quantitative tests were considered important, but not simply as drill techniques. Tests should be included, it was argued, only in experiments designed to bring out principles and concepts of biochemistry. For some purposes, these experiments may best be isolated experiences, but consecutively related experiments have great value. A need was expressed for a laboratory course built primarily around animal experiments designed to show how biological data are collected, how their validity may be tested, how biological variation influences their interpretation and how biochemical hypotheses are built and tested. It was recognized that a change toward this point of view is going on in many departments. The job is expected to require a tremendous amount of work.* The need for a continued exchange of ideas and experience on this subject among biochemistry teachers was recognized.

3. *Pharmacology*

Of the three disciplines, pharmacology was the most confident in this Institute. It makes use of all kinds of pertinent information, chemical and biological, physiological and biochemical, preclinical and clinical, and has the most concrete contributions to make to the physician's more obvious needs.

In accordance with pharmacology's interests and curricular position (Table 12), it is the least doubtful about the desirability of bringing in clinical references whenever possible (Table 5A). Indeed, insofar as pharmacology wishes its course to be a basis for therapeutics (and this tendency is well developed), the study of disease is essential. Its position in the curriculum and the nature of its subject matter peculiarly suit it to act as an agency of correlation of knowledge for the benefit of the student. Pharmacologists wish to place the course toward the end of the second year in order to make the best use of this correlative function (Table 11). Some are considering whether the pharmacology course ought not to be delayed until the end of the third or even the fourth year so that students will return to an experimental discipline after they have been exposed to the problems of the clinic. Despite this they take the same attitude toward the presentation of patients and the use of man in the laboratory as do physiologists.

It has a special problem connected with therapeutics. How far into this basically clinical realm should it go? The participants would limit this to the *principles* of therapeutics. They felt that they should not exclude nontherapeutic substances from consideration in their introductory courses provided they were useful in exemplifying important principles. Yet there is a strong tendency to select clinically useful compounds as the examples of pharmacological action, and to include clinically promising compounds, especially when these illustrate new principles or striking applications of old principles. It was felt that the selection of material for the course and the partition of emphasis on the subjects selected would be made on the following basis: clinical importance; exemplification of principles of the interaction between drugs and the body; and contribution to the development of pharmacological thinking.

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*It will also require a considerable expenditure of money for remodeling, since the single large biochemistry laboratory, filled with work tables, is not suitable for mammalian experiments.

The multiplicity of pharmaceutical names besets the pharmacology teacher as much as it does the student. Pharmacologists are, therefore, more sensitized to the necessity for some standardization of nomenclature than are their colleagues in physiology and biochemistry. Our pharmacology participants would cleave to generic, noncommercial names of drugs, using whenever possible the names which are official in the United States Pharmacopeia. They have almost as much trouble persuading the physiologists and biochemists to go along with them on this policy as they do with the clinicians, who have the special liability of being under the influence of the detail men, those busy perpetuators of trade names.

The pharmacologists minimize the importance of requiring the student to memorize structural formulas, pharmaceutical preparations and the physicochemical properties of drugs. One group in the Institute agreed that only the metric system should be used and that even conversion tables for the apothecary system should not be brought into the course. They do not believe that it is up to them to teach the medical student the fine points of prescribing, but they are willing to spend enough time on the essentials of prescription writing (about an hour of lecture, some prescribed reading and some practice) so that he will be able to write a simple prescription intelligibly. A few of the pharmacologists at the Institute would have the medical student learn many doses; but the prevailing opinion was that he should learn only a few critical ones. Some of those present felt that no specific doses should be memorized, but that the student should know where to look up data on dosage. They consider the clinical years the proper time to learn the doses of other drugs which the student is then using.*

They consider much more important to the future clinician an understanding of pharmacodynamics in the sense of the influence of absorption, excretion, and metabolic inactivation, on the manner in which a drug must be given to a patient in order to obtain a particular effect. They insist also on some knowledge of the factors and diseases which alter the sensitivity of patients to drugs. Their teaching material is intimately woven through with the effect of disease upon the action of drugs as well as the effect of drugs on the course and mechanisms of disease. The student should get some understanding of the criteria by which a physician may tell whether his medication is having any effect or not. He should have a general knowledge of the unfavorable effects of the commonly-used drug (even though it requires an exercise of memory!), and he should know how to find out about those drugs with which he is not familiar. He must gain some understanding of how new drugs are evaluated so that he may know what to make of the detail man's advice in later years.

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*This matter obviously requires the cooperation of the clinical teachers who, in some schools, force the inclusion of minutiae in pharmacology courses by an uncompromising attitude toward third-year students.

He must also know something of the art of evaluating reports of clinical therapeutic successes. He should be assisted in realizing that the fact that a physician gives a patient a medication may of itself, and despite the action or lack of action of the drug, make the patient feel better.

Perhaps more than the other disciplines, pharmacology, as represented in this Institute, recognizes that it has some role in helping the physician to understand his position in the complex of medical service which he enters as soon as he sees his first patient as a clinical student, and of which he will be a full-time unit when he becomes a physician. Our pharmacologists feel a responsibility to see that the problems of alcohol and opiate addiction are discussed, at least insofar as they pertain to pharmacology. In our society, the physician does not have to be a pharmacist, and most of our participants would not require the medical student to do any compounding, but some of the groups suggested that the pharmacology course is a good place to introduce the student to the pharmacist as a colleague in medical service. The role of the drug company in pharmacological research and in the advertising and selling of drugs was also considered an important subject to discuss. Most of the participants seemed to feel that there is no time in the introductory course for the subject of industrial or agricultural poisoning. The pharmacology discussion groups felt that it was important from several points of view to emphasize in the course how new drugs are developed, how their usefulness is demonstrated, and how they are received by the public and the medical profession.

Chapter 4

Interrelationships

EUGENE M. LANDIS*

THE DISCUSSIONS OF the second day were devoted to considering interrelationships of teaching activities in biochemistry, physiology and pharmacology. Included were (a) interrelationships of these three subjects with each other and the medical student of the first and second years, (b) interrelationships through medicine and surgery with third and fourth year students and (c) certain basic interrelationships which are important to all the above and yet frequently overlooked, namely, interrelationships with biology, chemistry, physics and mathematics. In addition, some attention was granted to interrelationships with (d) other professional schools of the university, (e) with hospitals and (f) with the community. This account, though based chiefly upon the recorders' reports of the Tuesday meetings, includes also relevant material from the responses to questionnaires, from delegates' reports and from the more general discussions held on Friday, the last day of the Institute.

Definitions

In each of the six conference groups, the chairman asked, as an initial question, that the members of his group decide to what extent they wished to consider the utility, at that stage, of defining more precisely such terms as interrelationship, cooperation, collaboration, correlation, combination of courses and integration. It became apparent almost at once in all six groups that the participants had little or no enthusiasm for attempting preliminary definitions of terms in abstract or theoretical fashion. On the contrary, it was argued that most understood what these terms referred to. It was agreed that more progress would be made by going immediately to a discussion of the problem itself. Then if these discussions, based on practical considerations, revealed a need for precise and detailed definitions, they could be considered again later in the day.

As expected, individual experiences, opinions and aspirations were prominent not only initially but throughout the day's discussions. For instance, in the beginning even the words correlation and integration were distasteful to a few individuals. To them these words suggested regimentation, subjugation** and loss of individual prerogative. Nevertheless, by the end of the day, and certainly by the end of the Institute, these terms were being used easily, constructively and with mutual understanding.

As discussion progressed, however, the actual terms developed different connotations. The word "correlation" was used most frequently and included the many more or less informal arrangements by which content of one course might be, for the student, "mutually related to" or "brought into proper relation with" the content of other courses. Likewise by usage, this correlation was subdivided into two categories. First, "horizontal correlation" was taken to refer to relationships between biochemistry, physiology and pharmacology themselves, and more or less concurrently. Second, "vertical correlation" was used to refer to relationships which these three disciplines, singly or collectively, might bear to (a) medicine, surgery or the clinical specialties in one direction, and (b) biology, chemistry, physics or mathematics in the other direction.

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*Footnotes to Chapters 3, 4, 5 and 6 were added by the editor and not by the authors.

**One delegate wrote, after the Institute, that a "well constructed house" of teaching throughout the four years of medical school "requires more than isolated piles of bricks and mortar" and this in turn necessitates a certain amount of "subjugation."

"Combined" or "joint" courses were those in which the interweaving of content was scheduled more formally by intermingling lectures and laboratory work in terms of common lecture schedules, rosters and teaching staff. "Integration" was usually applied to still more intensive efforts to correlate the subject matter of several disciplines typified by the special teaching experiments in progress at Western Reserve and at Harvard. In short, serviceable connotations emerged from discussion even though no formal and precise definitions were decided upon.*

General Considerations

Particularly in the opening period of discussion, but intermittently throughout the day, comments were made which were of considerably broader significance than the specific problem which stimulated them. These have been gathered together in this section under the heading of "General Considerations" because collectively they provide some background for the more specific items described below.

In the first place, several discussors called attention to the standing which the medical sciences, medicine and surgery, have attained on this continent during the past two or three decades. They called attention also to the constantly increasing number of interested visitors and students from abroad. Granted that medical education, and specifically the preclinical subjects, can claim only a part of the credit for these attainments, yet it was asked whether we are not perhaps unduly concerned and too self-critical about such matters as interrelationships, correlation and integration. Nevertheless, at the Institute's closing discussions and afterward, the participants generally expressed the mutual value of comparing teaching methods and objectives on a nationwide basis. Many mentioned the new ideas they were taking back to their own classes and interdepartmental conferences.

Second, the delegates' reports and the answers to questionnaires indicated in impressive fashion the great amount of energy and originality which conscientious teachers have been, and are, putting into teaching and teaching experiments, most of which are more or less directly aimed at increasing effective correlation. The summary of "Experiments in Medical Education" (Appendix III) collated directly from delegates' reports, is evidence of this. One of the major benefits derived from the Institute is the recording of these efforts which would probably not have been heard of or recognized otherwise. Several participants stated that in view of the considerable efforts already

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*It was suggested at one of the open discussion groups on October 26 (and probably not *too* jocularly) that three stages must precede the above-defined types of interrelationships:

(1) *Recognition* (members of one department recognize upon sight members of another department at the school).

(2) *Amiability* (members of one department develop friendly relationships with members of the other departments).

(3) *Consultation* (the amiability extends to discussion of mutual teaching problems).

directed toward correlation and integration, the Institute might profitably devote considerable time to comparing their relative advantages and disadvantages, so that they might return to their respective medical schools with knowledge of several approaches that might be fitted into the conditions existing in their own schools.

Third, although little attention was given to this matter on the first day (see p. 26) discussion during the second day showed promptly that there was real and general eagerness to consider, for the medical student's sake, possible changes or improvements which will help him cope with the enormous burden of factual information and of principles now required for his doctorate in medicine. It was generally agreed that the relating of fact to fact, the relating of biochemistry to physiology, the relating of biochemistry and physiology to pharmacology, can be aided by a teacher. In addition, however, it depends equally on the student himself. Correlation and integration require sufficient leisure for both teachers and students to accomplish their own shares of this thought-requiring and time-consuming process. Fundamentally, the problem seems to be that of getting individual, interested students in closer contact with individual enthusiastic teachers under favorable conditions. Among these favorable conditions what used to be called academic leisure ranks high.

By way of comparison, Table 16B summarizes the answers of senior students when asked: "Do you believe that the teacher, student or both should integrate knowledge?" None of the senior students in 27 schools felt that this should be done by the student alone, in seven schools they felt that it should be done by the teacher and in 16 schools they felt that it should be done by both. A typical comment was, "Both should integrate medical knowledge, but the student needs much guidance and help; the teacher should take the lead."

Fourth, the presence of several participants with teaching experience in European schools prior to their coming to this continent offered opportunity for making comparisons. Apparently the atmosphere in American universities is more compulsive than in European universities. Our universities seem to lack a sense of student responsibility and freedom which is traditional abroad. Discussion of student freedom, student responsibility and student leisure produced a wide variety of comments. Some felt that first-year medical students are not capable of making integrations or correlations by themselves. They must have extensive aid in their first year, with the very best teachers and the most careful planning of the curriculum possible. Cited in support of this view is the apparent "immaturity" of students, despite their three or four years in college. This is rated in Table 21A as an important "defect in premedical training."

From observing educational experiments other participants felt that they had already demonstrated quite clearly that first-year students, given opportunity and time, have tremendous capacity for educating each other. This capacity cannot be detected, it is believed, through our conventional methods of teaching.

Fifth, unnecessary duplication of subject matter is frequently mentioned as one of the causes responsible for attempts to insert more and more special courses and to crowd or lengthen the medical school curriculum. Duplication of subject matter had defenders, however, who stressed its usefulness. Correlation should not be simply avoidance of duplication as though duplication or repetition is an evil in itself. Students recognize the value of repetition and realize that once over a subject is not enough for mastery. To some extent, duplication of subject matter even by the same teacher in the same context is defensible as one method of learning and even one method of correlating. It was generally agreed, however, that duplication should be limited to essential principles and should be varied in context.

Passing attention was given also to the confusing differences of nomenclatures and multiple medical synonyms now in use. It was suggested that biochemists, physiologists and pharmacologists should use terms that are identical, or at least similar. The same effort should, for completeness, be carried into the clinical years. On the other hand, extreme standardization would leave the student after graduation very uncertain and poorly equipped to deal with general medical literature, not to mention the greatest source of confusion, namely the many proprietary names used by drug houses for the same substance.

Sixth, questionnaires, delegates' reports and discussions revealed agreement by large majorities that it is essential "to teach fewer facts and spend more time on general concepts," "to improve correlation in the first and second years," "to increase the effectiveness of basic science—clinical conferences in the third and fourth years" and, with some reservations, "to place more emphasis on clinical problems in basic science courses."

Methods of Increasing Correlation and Integration

Though various forms of correlation may not be separable in fact, it will be convenient for purposes of summarizing discussions to consider first the methods of improving the effectiveness of horizontal correlation; i.e., correlations among the subject matters of biochemistry, physiology and pharmacology. This leaves for later consideration the matter of vertical correlation (a) toward the clinical years and (b) toward the basic sciences and the college years.

A. HORIZONTAL CORRELATION

1. Simple increase of total scheduled class hours not recommended as a method of achieving more correlation.

At a time when curriculum committees are besieged by requests for hours particularly in the first two years, to give more or longer courses, it will be a relief to note from the answers to the questionnaires that biochemists, physiologists and pharmacologists do not wish to *increase* the number of hours granted to them in the first year (rating for Item B, Table 13, is 0.3 to 0.7; maximal rating=3.0). On the other hand, they do not wish to *reduce* the time granted to their subjects in the first year, and transfer some of these instructional hours to the third and fourth years for correlation courses (Table 13, rating for item A: 0.1 to 0.5). The same table indicates, however, that quite a few clinicians must be willing to see these hours decreased in the first year (Table 13, rating for item A: 1.5 and 1.6), but almost all clinicians are apparently against increasing these hours (Table 13, rating for item B: 0.2 and 0.3).

General lack of desire for any increase of total hours to be devoted to biochemistry, physiology and pharmacology was also found in the discussion groups. The possibility of brief survey courses, redistribution of time among the first, third and fourth years, as well as increased total course hours in the four years were either not discussed at all or passed over rapidly as ineffectual measures. As will be described below, much more emphasis was placed upon changes of teacher/student ratio to permit, within the existing hours, more personal education, personal instruction and small conferences (Table 13, rating for item C: 2.2 to 2.4). There was equally general endorsement (Table 13 rating for item D: 1.9 to 2.5) of "teaching fewer facts; spending more time on general concepts, training the student to read and evaluate critically, and to continue his own education."

In summary, questionnaire results and discussion agreed that in order to improve correlation, attention should first be directed to existing teacher/student ratios. This seemed to imply better utilization of time already allocated to these subjects rather than more teaching hours. Discussion seemed to favor, first, making more effective use of existing courses and educational arrangements and then, second, the cautious testing of more drastic curricular rearrangements.

2. *Informal methods of improving correlation among existing courses.*

The answers to the questionnaires were used as the basis of discussion because they provided an indication of the present division and correlation of subject matter under existing conditions. In Table 15A physiologists and biochemists rated their own consultation with other preclinical departments highest in categories B and C; i.e., "simple division of subject material; (e.g., we'll cover digestion, you cover vitamins)" and "interdepartmental conferences on schedules, content, methods of teaching, etc." Among biochemists there are slightly more entries in the column headed "little or none" (category A) and somewhat fewer in category C. It appears the "close correlation" and formal joint arrangements of laboratory and lectures throughout entire courses are found most frequently, as might be expected, in joint departments. Also, as might be expected, in pharmacology courses, given almost always in the second year, the highest ratings in consultation lie in categories A and B; i.e., little or no consultation and simple division of subject material.

Equally informative were the ratings of delegates shown in Table 15A, according to which 51 departments make "reasonable" and "definite, systematic" efforts at consultation with other departments. Twenty-two departments make, according to the delegates, "no effort" or "some effort, but not enough." It appears that in the existing framework, greater consultation by itself can improve correlation greatly.

Discussion emphasized the considerable effectiveness of highly informal and simple methods of achieving both effective division and effective correlation of subject matter. For instance, luncheon conversations, informal conferences and systematic exchange of lecture schedules, laboratory exercises or instructions and any other mimeographed or printed material given to the students can achieve a great deal. Probably much more would be accomplished by interdepartmental meetings, not only while schedules were being prepared but at intervals during the teaching season, for comparing effectiveness and results of these schedules. In this connection, too, it was emphasized that divisions of subject matter by departments should not eliminate all duplication but should rather make provision for planned repetition in new contexts.

It was concluded that at the very least each department should furnish its lecture and laboratory schedule *to all members of other departments* so that each man, senior or junior, who is giving lectures or supervising laboratory work may know who is covering potentially overlapping topics in each of the other departments. Informal conversations and adjustments between junior staff members in terms of single lectures or correlations of laboratory work can be highly effective. The distribution of lecture outlines was stressed as a method of disseminating information concerning course content throughout the preclinical and clinical areas.

Discussion also tended to defend informal approaches. It was recognized that local situations, personalities and the skills or interests of individuals in the three departments will make divisions of material very different from institution to institution. It was felt important to allow individual departments all possible freedom in this direction. Examples were cited to show that interested and enthusiastic junior instructors, one from each department, can achieve remarkably effective correlations and vastly stimulate student interest thereby. It is important that departmental chairmen foster these informal arrangements by young staff members; potentially effective innovations can be destroyed very easily by lack of interest, by a too conservative attitude or by lack of encouragement.

Discussion revealed also certain limitations which affect distribution of subject matter between departments (shown also in Table 15B). By reason of experience, techniques and research interests, topics related to intermediary metabolism are almost everywhere put in the teaching province of biochemistry alone. At the other extreme the subject of renal clearance is usually covered almost entirely in physiology courses. Topics relating to digestion, body fluids and energy metabolism are commonly divided between the two departments. Moreover, the research interests of individual department members unquestionably influence the areas covered in lectures and laboratory. No set rule can possibly apply to all medical schools, nor even to one pair of departments, because staff members change from year to year and with them special interests or aptitudes. The old argument that teachers should lecture on any subject other than their research, that they should teach different topics in lectures and laboratory every year was mentioned. Advantages and disadvantages seemed evenly balanced; e.g., more elementary coverage, omission of specialists' details and reservations. vs. greater time required for preparing lectures and also loss from lectures and laboratory of the investigator's enthusiasm for his own subject. In most courses a "middle ground" seems to be the rule, each lecturer having one or more hours on his own favorite subject matter, but usually a considerable amount of time is spent necessarily on topics not in his field of direct interest.

3. *Attending lectures or conferences given by others.*

Table 17 offers an estimate of the frequency with which teachers attend lectures and conferences in their own or other departments. With all the reservations that surround any questionnaire calculation and any "average," one can estimate that the "average" member of a physiology, biochemistry or pharmacology department attends per annum approximately 17 to 19 lectures given by colleagues in his own department, from six to eight lectures given by colleagues in other preclinical departments, from nine to 11 clinical lectures or seminars, from five to eight clinical basic science correlation lectures or seminars, less than five ward rounds and from four to nine clinicopathological conferences. But these "averages" are too high for professors and assistant professors. A more detailed table, from which Table 17 was derived, indicated that: instructors are apt to go to many more lectures than department chairmen or full professors; this is to be expected because in their first years of appointment instructors are still becoming familiar with their subject in general. It appears also that pharmacologists are slightly more apt to attend clinical lectures or seminars, ward rounds and possibly clinicopathological